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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases,
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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U. S. DEPT. OF AGRICULTURE

Vol. 31

January 10, 1939

No. 1

Personnel (Dec. 11 - Jan. 10) and Field Station (Dec. 1 - 31)

PERSONNEL ITEMS

Dr. M. T. Jenkins spent the week of January 2 at Columbus, Ohio, attending the sessions of the Ohio Corn Hybrid School.

Dr. A. E. Longley left Washington January 5 for Canal Point, Florida, where he will make pollinations, take notes, and collect cytological material of the corn-teosinte plantings. He will return to Washington about March 1.

Mr. Leonard W. Stahler arrived in Washington December 29, 1938, to help prepare progress reports of cooperative weed control investigations. He will be in Washington about 4 weeks.

RECENT PUBLICATIONS

A. T. Bartel and J. H. Martin. The Growth Curve of Sorghum. *Jour. Agr. Research* 57(11): 843-849, figs. 1-3, December 1, 1938. (G.1115)
(Cooperative investigations of the Division of Cereal Crops and Diseases and the Arizona Agricultural Experiment Station.)

Wayne M. Bever. Reaction of Wheat, Barley, and Rye Varieties to Stripe Rust in the Pacific Northwest. *U. S. Dept. Agr. Circ.* 501. 15 pp. December 1938. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

J. Allen Clark. Registration of Improved Wheat Varieties, XII. *Jour. Amer. Soc. Agron.* 30(12): 1037-1042. December 1938.

Roderick Sprague. Soil-Borne Cereal Diseases in Coastal Oregon. *Northwest Science* 12(4): 74-80. November 1938. (Cooperative investigations by the Division of Cereal Crops and Diseases and the Oregon Agricultural Experiment Station.)

The Status of Septoria graminum. *Mycologia* 30(6): 672-678, figs. 1-5. Nov.-Dec., 1938. (Cooperative investigations by the Division of Cereal Crops and Diseases and the Oregon and Washington Agricultural Experiment Stations.)

T. R. Stanton. Registration of Varieties and Strains of Oats, VIII. *Jour. Amer. Soc. Agron.* 30(12): 1030-1036. December 1938.

, H. C. Murphy, F. A. Coffman, L. C. Burnett, and H. B. Humphrey. New Disease-Resistant Early Oats from a Victoria-Richland Cross. *Jour. Amer. Soc. Agron.* 30(12): 998-1009. December 1938. (Contribution from the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station, cooperating.)

J. C. Stephens and J. R. Quinby. Linkage of the Q B Gs Group in Sorghum. Jour. Agr. Research 57(10): 747-757, fig. 1. November 15, 1938. (G-1110) (Cooperative investigations of the Division of Cereal Crops and Diseases and the Texas Agricultural Experiment Station at Substation No. 12, Chillicothe, Texas.)

J. W. Taylor and F. A. Coffman. Effects of Vernalization on Certain Varieties of Oats. Jour. Amer. Soc. Agron. 30(12): 1010-1019, figs. 1-2. December 1938.

✓ Barbara Worrell. That's What They Call 'Em. Better Crops with Plant Food. 22(8): 17, 36. October 1938.

N O T I C E

Referring to the note on the COMMITTEE ON MANUSCRIPTS in the Cereal Courier vol. 29, no. 3, p. 21, March 10, 1937, it seems necessary to call attention to the necessity for submitting three copies of all manuscripts for which approval is desired either for publication or presentation at meetings or over radio stations.

A.H.B.K.

ADMINISTRATIVE NOTES

Every Form 1034 voucher must contain a brief statement of the purpose of purchase or service such as: "For operation of government truck," "Repairs to government owned typewriter," "For baking experiments," etc.

For inventory purposes it is necessary to furnish more detailed information on the purchase vouchers than is generally given, so that the proper records may be made. This may be done by giving measurements or some description that will identify each item; purpose for which each item is to be used; whether item will be a separate unit or whether it will be built into and become a part of a larger piece of equipment. Vouchers for laboratory equipment should state of what material an article is made.

H. S. Smith
Jr. Administrative Assistant.

NOTICE

Attention is directed to the following memorandum:

November 28, 1938

MEMORANDUM FOR HEAD CLERKS,
Bureau of Plant Industry.

Will you kindly request all employees under your jurisdiction to forward to the Office of Accounts the cover of "Tax Exemption Certificates" as soon as the book is exhausted?

Any books on hand containing certificates that will not be used should be turned in for cancellation.

Very truly yours,

W. P. Cox
Assistant in Charge of Accounts.

The above memorandum is printed a second time to emphasize the rule that all communications to the business offices of the Bureau must be sent through the Division of Cereal Crops and Diseases.

H. S. Smith
Jr. Administrative Assistant.

Scientific Meetings

At the meetings of the American Association for the Advancement of Science and affiliated societies, held in Richmond, Va., December 27 to 31, 1938, the following papers were presented by members of the staff of the Division:

Relation of Root Reserves to Control of European Bindweed (Convolvulus arvensis L.) A. L. Bakke, W. G. Gaessler, and W. E. Loomis.

Tripsacum dactyloides, Another Native Host of Aplanobacter stewarti. Charlotte Elliott and Alice L. Robert.

Comparative Studies on Two Genotypes of Nicotiana tabacum Resistant to Nicotiana Virus 1. H. H. McKinney.

Cytological Observations on Zea-Euchlaena Hybrids. Joseph G. O'Mara.

Monosomes, Trisomes and Segmental Interchanges from a Haploid of Triticum vulgare. E. R. Sears.

Reciprocal Translocations in Triticum monococcum. Luther Smith.

Influence of Environment, after Seedling Emergence, on Loose Smut of Oats and Covered Smut of Barley. V. F. Tapke.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. M. Jenkins)
(Jan. 6)

In December temperatures were about normal. The maximum temperature of 76° F. is 3° higher than in December 1937; the minimum of 29° is 3° higher and the mean temperature of 52° is 1° lower.

The total precipitation of 2.84 inches is 0.59 inch less than in the same month last year and 3.11 inches less than the 28-year average for December.

The total precipitation of 48.92 inches for the year 1938 is 6.58 inches less than the 28-year annual average of 55.50 inches.

Farmers took advantage of the exceptionally good weather in the past several months to complete their plowing. Some have gone so far as to disk land that was plowed in late summer or early in the fall.

Plowing was completed on the Station in the third week of December.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Jan. 2)

Cool weather and 0.19 inch of precipitation in December enabled wheat to hold on with little additional evidence of drought injury. Very little leaf growth took place in November or December, although light showers apparently enabled secondary roots to develop and anchor the plants more securely.

Wheat has made much less growth than during the past two winters and many farmers who ordinarily winter their cattle on wheat pasture have been forced to provide other feed this winter. Only wheat seeded in September is furnishing any pasture.

Temperatures have been low enough to kill all fall-sown spring oats and spring barley and roughly three-fourths of the varieties in the uniform winter hardiness oat nursery. Winter barleys have shown little or no injury, and of the wheats only a composite of several durum varieties has evinced any frosted leaves.

In spite of low rainfall in the last five months in 1938 precipitation in 1938 was high, totaling 29.30 inches, or 5.71 inches above the 24-year station average.

Maximum, minimum, and mean temperatures in December were 65° on the 10th, 8° on the 26th and 27th, and 38°, respectively.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Jan. 3)

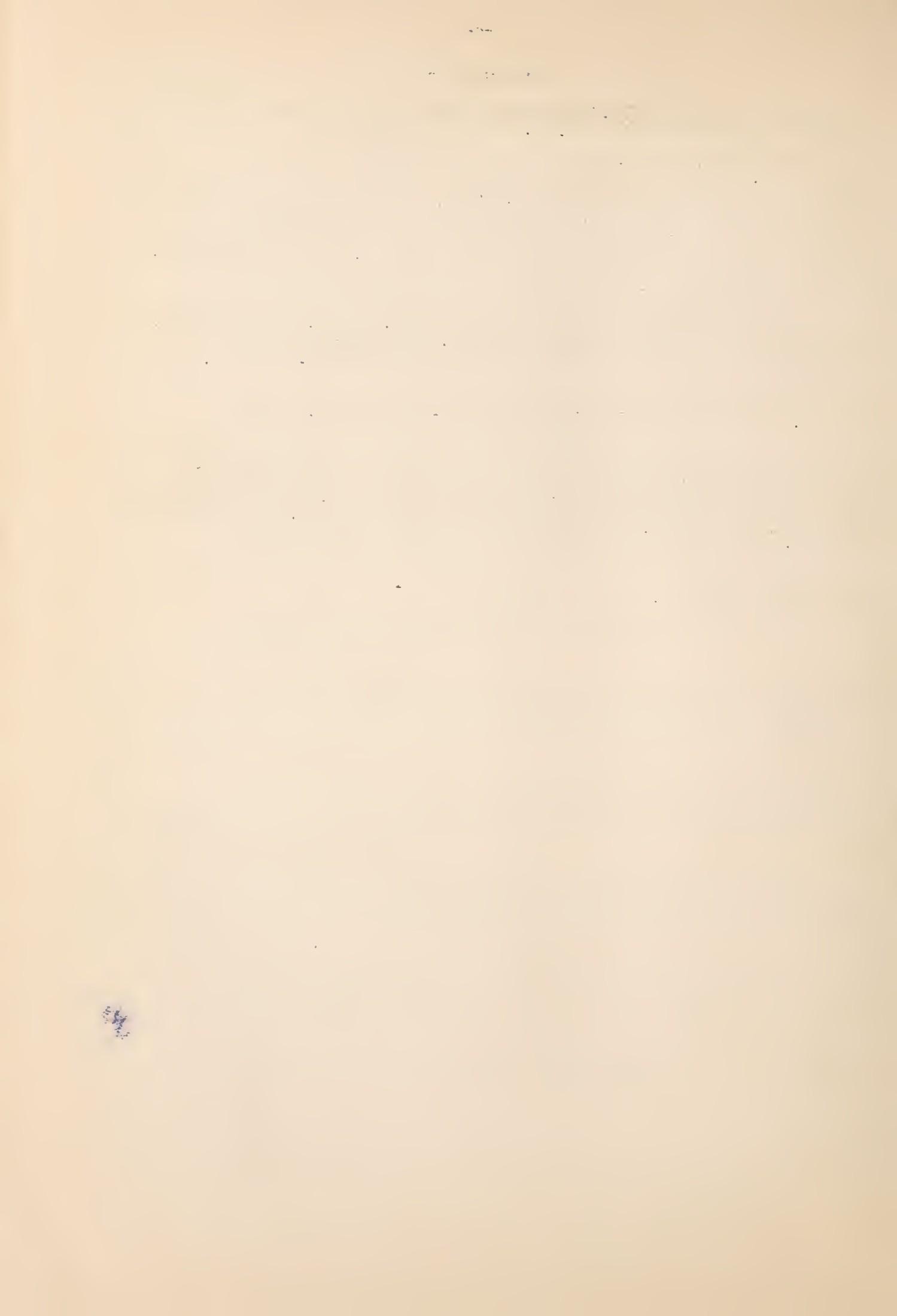
Temperatures during the first 25 days of December were unusually high. From Dec. 1 to 24 no temperature below 7° was recorded and the mean temperature for the first 25 days was 27°. If these mild temperatures had continued until the end of the month, it would have been the warmest December on record for over 60 years. During the last six days of the year an extreme cold wave prevailed with a mean temperature of 9° below zero. The mean temperature for the month was 21°. The maximum temperature was 49° on the 9th and the minimum -27° on the 28th.

The precipitation in December was only 0.18 inch. The total precipitation for the year 1938 was 15.04 inches, which is very nearly equal to the average annual precipitation for the past 25 years of 15.17 inches.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Jan. 3)

The month of December was unusually mild and dry with only 0.18 inch of precipitation. Temperatures remained above zero until the week following Christmas when a few below-zero days were recorded. The minimum temperature was -28° on the 29th and the maximum 51° on the 10th. The mean temperature was 20.8°, or 4.4° above normal. The temperature rose to about 40° today. The ground has been bare of snow during most of the month.

The total precipitation for 1938 was 16.65 inches, or about 1 1/3 inches above normal.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 31

February 10, 1939

No. 2

Personnel (Jan. 11 - Feb. 10) and Field Station (Jan. 1 - 31)

PERSONNEL ITEMS

Dr. E. G. Bayfield was in Washington for a few days in the middle of January to confer with members of the Division staff on milling and baking research on soft winter wheats.

Mr. C. E. Bode attended the meeting of the American Association of Cereal Chemists at Cincinnati, Ohio, on January 14.

Mr. E. P. Carter left Washington on January 21 to make a 10-day trip in Ohio, Kentucky, Indiana, and Illinois to confer with grain inspectors, grain dealers, and millers on heat-damaged wheat.

Dr. S. C. Salmon and Mr. J. Allen Clark attended the Sixth Hard Spring Wheat Conference held at the Nicollet Hotel, Minneapolis, Minn., Feb. 2 and 3. Field men of the Division also authorized to attend were Dr. E. R. Ausemus, Glenn S. Smith, J. C. Brinsmade, Jr., R. W. Smith, and Dr. R. H. Barberg. The Conference was sponsored by the Northwest Crop Improvement Association and State station workers from Minnesota, North Dakota, South Dakota, and Montana were in attendance. Dr. Ausemus was program chairman and all of the Division representatives took part in the round table discussions on the problems relating to spring wheat improvement.

Mr. Glenn M. Smith attended the meeting of the National Canners Association in Chicago, Ill., January 23 to 27.

Mr. T. R. Stanton attended the Fortieth Annual Convention of the Association of Southern Agricultural Workers, which was held in New Orleans, La., from February 1 to 3. He presented a paper entitled "The Problem of Maintaining Identity and Pure Seed of Southern Oat Varieties." Among those who attended the meetings were Dr. M. T. Jenkins and Mr. Hugo Stoneberg.

RECENT PUBLICATIONS

Annie M. Hurd-Karrer. Relation of Sulphate to Selenium Absorption by Plants. Amer. Jour. Bot. 25(9): 666-675, figs. 1-3. November 1938.

Helen Johann. Scolecospores in Diplodia zeae. Phytopathology 29(1): 67-71. January 1939. (Cooperative investigations by the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

K. S. Quisenberry and J. Allen Clark. Hard Red Winter Wheat Varieties. U. S. Dept. Agr. Farmers' Bull. 1806, 18 pp., 10 figs. December 1938.

G. F. Sprague. An Estimation of the Number of Top-Crossed Plants Required for Adequate Representation of a Corn Variety. Jour. Amer. Soc. Agron. 31(1): 11-16. January 1939. (Cooperative investigations of the Missouri Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Feb. 1)

The year 1939 started out very favorably with 2.83 inches of precipitation that fell in such a way as to nearly all soak into the soil. This was the highest January precipitation on record, the nearest approach being 2.24 inches in January of 1894.

Temperatures so far this winter have been comparatively mild although cool enough so that little growth of cereals took place. A January 15 seeding of wheat has not emerged to date, although a seeding on December 15 emerged on January 14.

Several wind storms during the month whipped some soil about in two parts of the nursery causing some damage to plants. The blow portion of the nursery was cultivated again yesterday and more sorghum bundles distributed through it so that it should be safe from further blowing for a time at least.

Maximum, minimum, and mean temperatures during the month were 74° on the 2d, 18° on the 14th, and 41°, respectively. The January mean was 7° higher than the 24-year Station average.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Jan. 24)

The fall and winter months of 1938-39 up to the present date have been mild and exceedingly dry at Manhattan. The lowest temperature so far recorded here was 6° on November 24 and 27 and December 27. Only 0.31 inch of moisture fell in December and January was equally dry until the 23d, when nearly three inches of snow fell. This moisture fell without wind and covers the ground evenly. The soil was not frozen at the time the snow fell and has taken full advantage of the slowly melting snow.

The moisture will be beneficial to winter wheat in this section, which has been in need of moisture all fall. Stands are very poor in many fields and the plants are too small to afford much winter pasture. On a considerable acreage to the west of Manhattan winter wheat is poorly rooted and therefore insufficiently anchored to withstand high winds. On thousands of acres many of the wheat plants failed to develop roots at the crown owing to dry top soil. Such plants are supported only by the primary roots and subcrown internode.

Leaf rust and stem rust that appeared in generous amounts on volunteer wheat in October were exceedingly hard to find after December 1, owing to low temperatures and dry conditions.

Rust work in the greenhouse is well advanced and some phases, such as physiologic race determinations, are nearly complete. All hybrid and parental plants have been subjected to a seedling rust test and are now being forced into heading through supplementary illumination. Studies on the effect of leaf rust on strength of straw and dry weight of leaves are under way.

The new greenhouses and attached head house are now nearly complete and are in use. Cereal rust investigations have been allotted a quarter of one greenhouse and joint use of one laboratory. The new additions combined with the two old greenhouses give Kansas an excellent plant for research in plant sciences.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Feb. 1)

Temperatures in January were generally mild. The mean temperature was 18°, which is 10° higher than the 25-year average. The maximum temperature was 47° on the 8th and the minimum -11° on the 15th and 21st.

Precipitation up to the 30th amounted to only 0.17 inch. On the 31st snow started falling and half an inch was recorded for the day.

The wind velocity in January was generally low and the average apparently was lower than in any previous January on record here.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Feb. 6)

The month of January was unusually mild with a mean temperature of 20.8°, which is about 10° above normal. The maximum was 50° and the minimum -13° on the 15th and 17th. The total precipitation for the month was 11 inches of snow, or 0.73 precipitation, including a snowfall of 6 inches that fell on the 31st. The precipitation for December was only 0.18 inch but the total from Oct. 31 to Jan. 31 was 2.32 inches, which is considerably above normal.

WASHINGTON

AGRICULTURAL EXPERIMENT STATION, PULLMAN (Wheat Improvement, O. A. Vogel) (Feb. 1)

The December-January precipitation at Pullman was the lowest on record with a total of 2.06 inches as compared with a normal of 5.33. The total precipitation for the September-January period is 3.83 inches under the normal of 10.78. The depth of penetration of moisture so far in the fields that were cropped last year is approximately two feet. Usually, by this time, the moisture has gone down beyond the third-foot level in comparable fields. The penetration of water into the soil during the next two months must be considerably above normal if the prospects for a good crop on land normally cropped each year is to be predicted by the first of April. The summer-fallowed fields, however, appear to have a sufficient amount of moisture.

Some of the rainfall occurred while the soil was frozen, which resulted in considerable run-off.

The winter wheat varietal nursery at Pullman is in fairly good condition at present, only the spring varieties showing from moderate to severe winter injury. The winter oats nursery appears to have been completely winter-killed. The winter barley nursery appears to be in fairly good condition.

OREGON

AGRICULTURAL EXPERIMENT STATION, CORVALLIS (Foot Rots of Wheat,
Roderick Sprague) (Jan. 17)

Conditions have been relatively favorable for growth of fall-sown grain in the Willamette Valley during the past two months. The fields appear bright green without very much of the usual yellow tinge that is observable during long periods of open weather such as we have experienced during the past six weeks. The grain had been hardened somewhat by a period of light frosts in early December and has not yet been forced into excessive leafy growth by the mild and fairly moist weather that has prevailed since then.

Seed treatment plots for the control of smut in winter wheat were planted October 13 to 15 at Moro, Pendleton, Condon, and High Prairie. Emergence at High Prairie was uneven and when seen in late October the earlier seedings were having difficulty emerging through a crust of dry soil. The cooperator (C. A. Johnson) reported, however, that late rains softened this crust and that the final stand was fair. The foot rot plot on High Prairie emerged early but the low smut plots on the white soil phase emerged irregularly, as moisture was short. In general, moisture conditions were poor on High Prairie and some spring seeding will be necessary, which is exceptional. The precipitation on High Prairie during 1938 was 18 inches, which is about 5 inches less than it has been averaging during recent years.

The plots at Moro and at Pendleton are reported to be in good shape. The plot at Condon was seeded in very dry and very lumpy soil but reports since indicate that the grain was emerging in late season.

CALIFORNIA

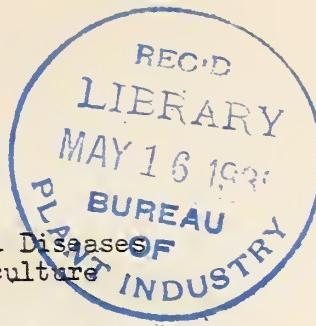
UNIVERSITY FARM, DAVIS (Cereal Agronomy, C. A. Suneson) (Jan. 31)

Subnormal rainfall for the greater part of California this crop year seems certain now. Precipitation from July 1 to date totals only 3.94 inches, whereas the normal for this period is 10 inches. The indicated deficiency at Davis is quite characteristic of most sections of the State. We normally expect only 7 inches of rain during the remainder of the crop year.

Frosts have been very common this winter, although the minimum temperature has never fallen below 25°. There has been an abundance of sunshine. Nearly all cereal crops have been sown. Growth is not characteristic since plants are much shorter and darker green than normal. Tiller formation and root formation are satisfactory. Stem rust seems to be overwintering successfully on summer-germinated wheat and barley. Other diseases are less prevalent than usual at this season.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

March 10, 1939

No. 3

Personnel (Feb. 11 - Mar. 10) and Field Station (Feb. 1 - 28)

PERSONNEL ITEMS

Dr. Arthur A. Bryan died at his home, 712 Ridgewood, Ames, Iowa, on the morning of February 22, 1939, after an illness of several weeks. He was born at Princeton, Mo., December 2, 1890.

Dr. Bryan attended the College of Agriculture of the University of Missouri from 1912 to 1915, graduating with the degree of B. S. in Agriculture in 1915. He was granted the Master's degree by the Iowa State College in 1925 and the Ph. D. degree by the same institution in 1931. From February 1916 to December 1917 he was Scientific Assistant in the Office of Corn Investigations of the Bureau of Plant Industry. In December 1917 he transferred to the Office of Western Irrigation Agriculture and was Acting Superintendent of the San Antonio (Texas) Experiment Station until February 1920, when he resigned his position and engaged in farming in southwestern Texas. In July 1922 he was appointed Junior Agronomist in the Office of Cereal Investigations and was assigned to the Iowa Agricultural Experiment Station in charge of the cooperative Iowa Corn Yield Test carried on by the Iowa Corn and Small Grain Growers' Association, the Farm Crops Section of the Iowa Agricultural Experiment Station, and the Office of Cereal Investigations. He was associated with Dr. J. L. Robinson in this work until January 1934, when, after the transfer of Dr. M. T. Jenkins to Washington, D. C., he was placed in charge of the entire Iowa Corn Improvement Program and promoted to the full grade of Agronomist. Since that time his efforts have been concentrated more largely on the breeding phases of the Improvement Program.

Dr. Bryan was an extremely diligent and painstaking worker. The high scientific esteem in which the Iowa Corn Yield Test is held is largely the result of his efforts. He gave unsparingly of himself to all those associated with him as well as to religious and civic organizations. His passing means a great personal loss to members of the Division who have been closely associated with him for many years as well as to the Corn Improvement Program which he has so ably carried on.

Dr. Bryan is survived by his widow, the former Miss Jessie Miller of Newton, Mo., and by his daughter Phyllis, a junior in Home Economics, at Iowa State College. He also leaves two brothers, Reece Bryan, of Princeton, Mo., and Roy Bryan, of Mercer, Mo., and a sister, Mrs. Ike Hoover, of Princeton, Mo.

Mr. C. E. Chambliss was elected President of the Washington Academy of Sciences for 1939 at the 41st Annual Meeting.

Mr. A. C. Dillman left Washington, D. C., on February 28 to spend two months in Minnesota, North Dakota, Montana, California, Arizona, and Texas in the interests of seed flax production and improvement. He will work with Prof. T. H. Hopper at Fargo, N. Dak., in preparing manuscripts on factors affecting the quality of seed flax and confer with officials of the agricultural experiment stations in the States named concerning cooperative flax experiments.

Dr. H. V. Harlan is leaving Washington for his usual summer trip in the barley-growing districts of the western States and will spend considerable time at Sacaton, Ariz.

Mr. J. Mitchell Jenkins came to Washington on February 17 to confer with members of the Division staff on cooperative rice research. He returned to Crowley, La., on February 25.

Dr. M. T. Jenkins left Washington on March 7 to make stops at La Fayette, Ind., Ames, Iowa, and Columbia, Mo., for conferences with officials of the agricultural experiment stations regarding cooperative corn experiments.

Mr. E. S. McFadden attended the meeting of the Gulf Coast Farm Chemurgic Conference at Beaumont, Texas, February 10-11. He presented a paper on Flax Production in South Texas.

Dr. J. G. O'Mara came to Washington February 15 for two weeks to confer with members of the Division staff on cooperative genetics research and to prepare manuscripts and reports.

RECENT PUBLICATIONS

C. O. Johnston and Travis E. Brooks. Kansas Mycological Notes, 1937. Kans. Acad. Sci. Trans. 41: 121-123. 1938. (Cooperative investigations of the Kansas Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

R. G. Shands. Chevron, a Barley Variety Resistant to Stem Rust and Other Diseases. Phytopathology 29(2): 209-211. February 1939. (Co-operation between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Roderick Sprague and Wm. Bridge Cooke. Some Fungi Imperfecti from the Pacific Northwest. Mycologia 31(1): 43-52. Jan.-Feb. 1939. (Cooperative investigations by the Division of Cereal Crops and Diseases and the Department of Botany of the Oregon Agricultural Experiment Station.)

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF BUDGET AND FINANCE
WASHINGTON

February 20, 1939

MEMORANDUM, BUDGET AND FINANCE, NO. 139

Transportation Requests Lost or Stolen

To Business Managers and Accounting Officers
of Bureaus and Offices:

Attention is invited to paragraph No. 36 of the Standard Government Travel Regulations, as amended, approved by the President, January 30, 1934 and December 10, 1935.

"36. Lost or stolen transportation requests. - Care should be exercised to safeguard Government transportation requests, as the value of lost or stolen transportation requests subsequently honored may be charged to the employee. Lost or stolen transportation requests should be reported promptly to the central office of the department or independent establishment through the official furnishing the request, and a copy of such report sent promptly to the General Accounting Office."

Lost or stolen transportation requests should be reported promptly to the Traffic Manager, Division of Purchase, Sales, and Traffic, giving the numbers of such requests and the numbers of the books in which they were contained. Copies of such reports should be transmitted direct from the bureaus to the General Accounting Office.

In the event transportation requests which have been reported as lost or stolen should be recovered they should be transmitted to the issuing officer for cancellation and filing.

H. A. NELSON,
Assistant Director of Finance.

NOTE:

All correspondence dealing with transportation must come through the Division of Cereal Crops and Diseases.

H. S. SMITH,
Jr. Administrative Assistant.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

RICE BRANCH STATION, STUTTGART (Rice and Oat Production and Improvement, C. R. Adair) (Mar. 3)

Winter oats look well considering the unfavorable fall season and the heavy rainfall in February. The station plots were ditched, so there has been very little drowning. Farm fields seen by the writer also appear to have suffered little from drowning. The survival of several varieties in the uniform winter hardiness nursery was determined today. The percentage survival ranged from 98.8 for Lee to 86.7 for Appler. None of the varieties in the uniform oat rust nursery has been completely killed, although the stand of several of the varieties has been reduced to about 35 percent. Many of the winter oat selections in the nursery look well at this time.

The rainfall in January and February was 1.10 and 8.37 inches, respectively, above normal. The temperatures were about normal, being slightly above in January and below in February.

It has been too wet to plow during the past two months. However, a great deal of plowing was done in November and December so the work is not much behind on the Station. The same is true on farm fields in this region. Plowing was resumed on the Station today.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Mar. 2)

The precipitation in February was abnormally high (1.01 inches) as compared with 2.21 inches in February last year and the Station average of 0.71 inch. Most of the 1939 February precipitation fell in the form of snow during the last half of the month, but inasmuch as the ground was not frozen, nearly all of it melted into the ground. The mean temperature for February was 32°, which was 3.6 percent colder than that of January.

Cereals made only a little growth during the month and most of that was during a period of four warm days. A minimum temperature of 5° on February 9 apparently caused little or no killing of oats or barley, whereas a minimum of 19° on the 28th, accompanied by a 5-inch snowfall and followed by a wind of near blizzard velocity that swept the snow into drifts, appears to have killed at least the tops of most oat and barley varieties; however, it is still too early to tell definitely the extent of the injury.

Spring seedings of barley, oats, wheat, flax, and perilla made on February 13 and 14 have not emerged as yet.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Mar. 4)

Until the first of February the winter of 1939 was a repetition of the warm, dry winter of 1938. Temperatures in January were 11° above normal and considerable apprehension was felt that winter wheat and fruit trees would begin growth too early, as they did in 1938. However, February was marked by the lowest temperatures of the winter in the Central Plains area. Minimums of 2° and 7° below zero were recorded on February 10 and 21, respectively.

Although the total moisture for February was below normal at Manhattan, an 18-hour fall of wet snow over the entire State of Kansas on February 27 provided about an inch of moisture. At Manhattan, the snow measured about 6 inches in depth and melted slowly. The soil was not frozen, so most of the moisture has penetrated instead of running off.

Leaf rust was reported from central Texas and from Oklahoma early in February and was found overwintering at Manhattan on February 1 and 15. A second report from Oklahoma on February 15 indicates that considerable leaf rust has overwintered on early-sown wheat in the vicinity of Enid in the north-central part of that State. Apparently the mild winter has favored abundant overwintering of leaf rust in the southern and central plains areas.

The situation differs from 1938, however, in that winter wheat has not made such an abundant top growth this year as it did in February and March of 1938. As a matter of fact, there is little top growth on wheat in most parts of Kansas, many fields being scarcely green at this time. Stands are poor in many localities and wheat plants are poorly rooted on a vast acreage of the western half of Kansas, owing to deficient surface moisture.

Seed has been prepared for the spring wheat and oats rust nurseries and will be sown as soon as the soil is dry enough. There will be about 400 rows of spring wheat and nearly 2,000 rows of oats. The latter are principally hybrid lines that are being tested for resistance to crown rust, stem rust, and smut.

Inoculum for hypodermic inoculations with leaf and stem rusts of wheat and crown and stem rust of oats now is being increased in the greenhouse.

NEBRASKA

AGRICULTURAL EXPERIMENT STATION, LINCOLN (Wheat Improvement, K. S. Quisenberry) (Mar. 1)

The condition of the winter wheat crop in Nebraska is a matter of much interest. The early winter was dry and rather warm over most of the State. In the southeast and in the extreme west plenty of moisture was available for normal fall growth but from Lincoln west to Hastings or McCook the soil was very dry and loose. January was unusually warm, being the third warmest since records have been kept. This warm weather caused wheat to turn green and start growth where sufficient moisture was available. During January some rain fell in western Nebraska.

The first seven days of February were mild, the temperature at noon on the 7th at Lincoln being 54°. By morning of the 8th the temperature was -2°, accompanied by a strong north wind. During the next day or two some snow fell in the eastern half of the State, and temperatures at Lincoln went as low as -11°. The last half of February has been cold, with some snow, and considerable freezing and thawing. On February 27 snow fell over the eastern half of the State to a depth of 5 to 16 inches, but a high wind caused it to drift badly.

Before the wheat was covered by the last snow it appeared to have suffered some killing during the last month. Leaf injury is very heavy and some of the tender varieties in the nursery are showing plants that seem to be dead. The first sudden drop in temperature came with the ground bare of snow, but during the coldest weather the plants were covered. Just what has happened cannot be determined until growth starts. The moisture will be of much benefit to the winter crop and the soil will be in better shape for spring seeding, which will start this month.

The controlled freezing program for the winter was completed in January. The results were not entirely up to expectations but for the most part satisfactory. The greenhouse wheat crop is developing nicely. Some very early spring types are mature and most of the winter types are heading. Several crosses are being made between adapted winter varieties and rust-resistant spring wheats.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Mar. 2)

Real winter weather prevailed throughout most of February in contrast to the mild weather of December and January.

Snowfall in February amounted to 0.62 inch of precipitation, most of which occurred during the first half of the month. The total precipitation in January and February was 1.29 inches, which is more than half an inch above the average for the past 25 years. Fairly high winds accompanied or followed the heaviest snowfalls so that considerable drifting of snow occurred, although in general low wind velocities prevailed throughout most of February. Some thawing has occurred so that the ground in exposed places is bare of snow, but most of the snow still remains unmelted in drifts.

The mean temperature for February was 1° , which is 12° below the 25-year average. Daily temperatures dropped below zero on all but 5 of the 28 days and the average daily minimum temperature was 11° below zero. The maximum temperature was 45° on the 18th and the minimum -34° on the 14th.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Mar. 2)

The month of February was considerably colder than usual, the mean temperature being -0.2° , as compared with a normal of about 13° . The minimum for the month was -38° on the 8th; the maximum was 40° . There were comparatively few stormy days. The precipitation for the month was 0.58 inch, which is slightly above normal. Stubble fields are covered with several inches of snow and the winter wheat in nursery and plots is still protected by snow.

Seed is being prepared for distribution and for seeding.

OREGON

PENDLETON FIELD STATION, PENDLETON (Cereal Agronomy, J. F. Martin) (Mar. 1)

Precipitation during the past fall and winter was below normal, but the lack of moisture is not particularly evident in fallowed soil. Moisture has not penetrated very far in land cropped last season, however, so more moisture is needed to get such land in shape for seeding next fall.

The winter has been unusually mild and in general there have been very few reports of winter injury. There is no appreciable evidence of winter-killing on the Station, even with nonhardy cereal varieties.

Fall-sown cereals emerged late in December, and stands are satisfactory. Barring sudden changes in weather, seeding operations will be begun this week.

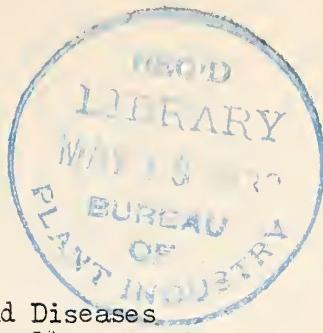
The lowest temperature during the winter was -8° on February 9. Plants were protected from cold by a snow cover.

ARIZONA

AGRICULTURAL EXPERIMENT STATION, TUCSON (Cereal Agronomy, A. T. Bartel) (Mar. 3)

Although the climatic conditions for January were about normal, the mean temperature for February was the second lowest on record (from 1892 to date). The mean temperature for February 1939 was 45.5° , 4° lower than for January and only 0.2° higher than the lowest on record. The minimum temperature of 25° occurred on February 10 and 28. The mean normal temperature for February is 52.7° . A precipitation of 1.60 inches was recorded for February, which included two light snows.

The small grain seedings here made but little growth in February. It is not known what effect the cold weather has had on the hybrid increase wheat at Mesa other than retarding its development.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 31

April 10, 1939

No. 4

Personnel (Mar. 11 - Apr. 10) and Field Station (March 1 - 31)

PERSONNEL ITEMS

Beginning with this issue the Cereal Courier will appear twice a month--- the 10th and 25th ---until December 10.

Dr. E. G. Bayfield, Mr. C. C. Fifield, Dr. M. A. McCall, and Dr. S. C. Salmon attended a two-day conference March 30 and 31 at Manhattan, Kans., to discuss the results obtained during the past year in the cooperative work of the Hard Winter Wheat Quality Laboratory and the program for the following year. There were also present at this conference representatives of the agricultural experiment stations of the southwestern States.

After leaving Manhattan, Dr. Salmon stopped at Ames, Iowa, on April 4 to discuss the cooperative weed research program in Iowa. On April 6 and 7 he was at Wooster, Ohio, to discuss the work of the cooperative Federal Soft Wheat Laboratory.

Mr. Bruce Caldwell returned on April 6 from Florida where he had spent several days harvesting material from corn and teosinte experimental plantings. Effective April 1, Mr. Caldwell was transferred from the Division of Cereal Crops and Diseases to the Federal Seed Act Enforcement Office.

Mr. C. C. Fifield was in Wooster, Ohio, March 27 and 28 to talk over with officials of the Ohio Agricultural Experiment Station certain phases of the cooperative work of the Federal Soft Wheat Laboratory before going on to Manhattan, Kans. On his return from Manhattan he stopped at Chicago on April 4 to confer with cereal chemists in some of the commercial laboratories.

Dr. M. A. McCall recently conferred with officials of agricultural experiment stations and personnel of the Division at St. Paul, Minn., Fargo, N. Dak., Ames, Iowa, and Urbana, Ill., on cooperative cereal research projects.

Dr. G. F. Sprague was transferred, effective April 1, from Columbia, Mo., where he was in charge of the cooperative corn breeding program, to take the place of the late Dr. A. A. Bryan in the cooperative corn improvement program in Iowa. Mr. Dean C. Anderson has been appointed agent, effective March 23, to continue the breeding phases of the cooperative corn program in Missouri subsequent to Dr. Sprague's transfer to Ames, Iowa.

Dr. G. A. Wiebe attended a hearing on the revision of barley grades at Milwaukee on March 13.

RECENT PUBLICATIONS

B. B. Bayles and J. W. Taylor. Wheat Improvement in the Eastern United States. Cereal Chem. 16(2): 208-223, fig. 1. March 1939.

H. M. Beachell. Cereal Nursery Seeders. (Note) Jour. Amer. Soc. Agron. 31(3): 265-268, figs. 1-7. March 1939. (Joint contribution of the Division of Cereal Crops and Diseases and Texas Agricultural Substation No. 4, Beaumont, Tex.)

Edgar Brown. Preserving the Viability of Bermuda Onion Seed. Science (n. s.) 89(2309): 292-293. March 31, 1939.

G. H. Dungan, A. L. Lang, J. H. Bigger, Benjamin Koehler, and Oren Bolin. Illinois Corn Performance Tests 1938. Ill. Agr. Expt. Sta. Bull. 450: 227-272, illus. January 1939. (Cooperation between the Illinois Agricultural Experiment Station and the Division of Cereal Crops and Diseases and the Illinois State Natural History Survey.)

Charlotte Elliott and Alice L. Robert. *Tripsacum dactyloides*, Another Native Host of *Aplanobacter stewarti*. (Phytopath. Note) Phytopathology 29(3): 284-285. March 1939.

K. F. Finney and M. A. Barnmore. Maintaining a Uniform Temperature in an Experimental Oven. Cereal Chem. 16(2): 289-292, fig. 1. March 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station in the Hard Winter Wheat Quality Laboratory at Manhattan, Kans.)

R. M. Hixon and A. L. Bakke. Portable Field Drier. (Note) Jour. Amer. Soc. Agron. 31(3): 268-270, figs. 1-2. March 1939. (Journal Paper No. J-618 of the Iowa Agricultural Experiment Station, Project 484, in cooperation with the U. S. Dept. of Agriculture.)

M. T. Jenkins. New Developments That May Affect the Corn Industries. The Importance of Corn Hybrids to the Corn Industry. Contr. Iowa Corn Research Inst. 1(2): 207-212. January 1939. (Cooperation between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

Glenn S. Smith. Durum Wheat Breeding. N. Dak. Agr. Expt. Sta. Bimonth. Bull. 1(4): 10-12. March 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the North Dakota Agricultural Experiment Station.)

G. F. Sprague. Corn Hybrids for Missouri. Missouri Agr. Expt. Sta. Circ. 201, 27 pp., 23 figs. January 1939. (Cooperative investigations of the Department of Field Crops, Missouri Agricultural Experiment Station, and the Division of Cereal Crops and Diseases.)

H. H. Thornberry and H. H. McKinney. Purification of Nicotiana Virus 6 Protein. Phytopathology 29(3): 250-260, fig. 1. March 1939. (Studies conducted under Bankhead-Jones Project S.R.F. 2-17, U. S. Department of Agriculture, Bureaus of Plant Industry and Chemistry and Soils cooperating.)

Marcus S. Zuber and Joe L. Robinson. 1938 Iowa Corn Yield Test. Iowa Agr. Expt. Sta. Bull. 379, 77 pp., 1 fig. February 1939. (Cooperation between the Iowa Corn and Small Grain Growers' Association, the Farm Crops Subsection, Iowa Agricultural Experiment Station, and the Division of Cereal Crops and Diseases.)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
Washington

Office of Chief of Bureau
B. P. I. Memo. 1032.

March 31, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

Your attention is called to the following Department regulation bearing on membership in military or naval organizations:

"1573. Membership in Military or Naval Organizations. - The appointment of an employee of the Department as an officer in the Officers' Reserve Corps, Marine Corps Reserve, National Guard, or Naval Reserve shall not become effective unless and until such appointment is approved by the Secretary of Agriculture.

"Any employee desiring approval by the Secretary of his appointment as an officer in the Officers' Reserve Corps, etc., shall request the chief of bureau in which employed to submit a written request for such approval to the director of personnel. As a general rule requests of this nature will be approved, and notice of such approval forwarded in duplicate to the chief of the bureau concerned. The employee shall be given the original of the notice of approval in order that same may be forwarded to the Department in which the appointment originated. No restrictions are imposed by this Department on membership in other Federal or State military or naval organizations."

Where an employee is recommended for appointment, and is already a member of the Officers' Reserve Corps, an application should be forwarded immediately requesting permission to retain his commission in the Officers' Reserve Corps. This application will then be forwarded to the Secretary for approval. We cannot grant military leave to an officer of the Reserve Corps until approval of his membership in the Officers' Reserve Corps has been given by the Secretary.

It is suggested that you review your staff and have applications submitted as soon as practicable covering any employees who may now be members of the Officers' Reserve Corps and whose membership in the organization has not received approval of the Secretary.

Very sincerely,

E. C. Auchter
Chief of Bureau

NOTE:

Employees of this Division who hold membership in the Officers' Reserve Corps please communicate with this Division.

H. S. Smith
Jr. Administrative Assistant

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. M. Jenkins)
(March 15)

The weather was mild and rather dry in both January and February. The maximum temperature in January was 77°, the minimum 31°, and the average mean 56°. Ice formed on only one day. The total precipitation in January was 2.92 inches. This is 1.76 inches less than the total in 1938, and 2.52 less than the 29-year average for January.

The maximum temperature in February was 79°, the minimum 28°, and the average mean 55°. Ice formed on two days. The total precipitation was 2.51 inches. This is 0.14 inch less than in February 1938 and 1.55 inches less than the 29-year average for February.

On February 14, a meeting was held at the Station for the county agents of the rice area of the State. In addition to the county agents, the Assistant Director of Extension and other administrative officers were present. The program was given for the purpose of acquainting the members of the Extension Division with the work of this Station and other work with rice by the Louisiana Experiment Station and the results obtained. Director C. T. Dowell presided and the speakers included, in addition to the local men, representatives from the main Station at the University.

According to the "Estimate Rice Acreage 1938," compiled by the Rice Millers' Association for the States of Louisiana, Arkansas, and Texas, the commercial acreages and production in barrels of three rice varieties released by the Rice Experiment Station were as recorded below:

Variety	Acreage	Yield (Bbls.)
Fortuna	29,898	357,804
Nira	48,919	658,136
Rexoro	106,293	1,465,847
Total	185,110 ^{1/}	2,481,787

1/ In 1937, the total acreage was 100,417.

(April 6)

The weather in March was exceptionally dry and warm. Of the total precipitation of 1.84 inches, 1.68 inches was recorded on the first day of the month. The 29-year average precipitation for March is 3.81 inches.

The maximum temperature was 84°, the minimum 40°, and the average mean 63°.

The favorable weather enabled farmers to proceed rapidly with field operations. Before the middle of the month a rather large acreage had been sown to rice. The continued dry weather, however, made seedbed preparation and seeding unsatisfactory towards the end of the month. In loose soils seeding continued, but in heavy soils seeding was discontinued because good seedbeds could not be obtained. Because of the dry weather, germination has not been very good. The indications are that stands will be very irregular, and in many instances reseeding will probably be necessary.

Spring seedings of barley, oats, wheat, and flax made on February 13 and 14 emerged to good stands on March 6 and are making satisfactory growth even though two severe wind storms in March killed parts of the leaves of many plants.

The precipitation in March was about normal. A total of 1.59 inches fell in four showers during the last eight days of the month. Some hail and snow accompanied one of the rains.

The maximum temperature was 81° on March 22 and the minimum, 16° on March 1. The mean temperature was 48°.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (March 15)

A severe rain and hail storm early the morning of March 11 caused great damage to property and experimental work at Manhattan. Hail stones about the size of walnuts falling for a period of a few minutes wrecked the college greenhouses and severely damaged all experimental work under way in them. It is estimated that more than 6,000 greenhouse panes were broken and that the total damage including the cost of reglazing will be in the neighborhood of \$10,000.

A torrential rain totaling 1.66 inches accompanied the hail storm. Severe damage to the rust nursery resulted from washing and deposition of silt. The spring wheat nursery sown the day before the storm was washed so badly that all rows probably will be badly mixed.

All research work in the greenhouses is at a standstill and cannot be resumed until enough space has been reglazed to provide some working space. In order to protect material not destroyed by falling glass all plant material was moved into the two newest greenhouses which lost only about 20 percent of their glass. Sufficient glass to repair those houses was obtained and they were temporarily reglazed Sunday.

Low temperatures since the storm has endangered all material but sufficient space now has been reglazed to protect plants.

FORT HAYS EXPERIMENT STATION, HAYS (Cereal Agronomy, A. F. Swanson) (April 3)

The condition of winter wheat is not so favorable in the Hays section and in the northwestern part of the State. This is due to a long dry winter, low temperatures, limited surface and soil moisture, and lack of soaking rains since last September. Precipitation during the last 30 days has been frequent but only in small amounts. This has stimulated growth of wheat on fallowed land, but on cropped land the stands are thin. Frequently on cropped land the wheat plants may be found just emerging. There has been no soil blowing and the weather for the most part in recent weeks has been pleasant.

Oats and barley seedlings have emerged to full stands a little in advance of the season. Considerable winter-killing of winter barley will be reported, notes of which will be taken as soon as the last danger of low temperatures is over.

Work on the Station has progressed satisfactorily. With the exception of a few nursery rows, no rice has been sown. All fields have been worked down so that the soil can be readily prepared for seeding when conditions are more favorable.

TEXAS

AGRICULTURAL EXPERIMENT STATION, COLLEGE STATION (Wheat Improvement, E. S. McFadden) (March 15)

None of the cereal rusts, with the exception of leaf rust of wheat, has so far made its appearance in the cereal nursery. However, the stage appears to be already set for another heavy infestation of leaf rust in our wheat nursery. The lower leaves of all susceptible varieties of wheat are now showing a fairly heavy and uniform infection. The disease was about a month later than last year in making its initial appearance in the nursery, but its spread has been very rapid during the past month.

There has been, for the past two months, a heavy and uniformly distributed infection of leaf rust in a plot of mixed wheat growing out back of the Station buildings. This plot was seeded early in the fall and was well established at the time of the first "norther" which occurred around the middle of November. The wheat nursery, which is located about a half mile west of this plot, had not emerged at the time of the November norther. The first infection centers of leaf rust were not found in the wheat nursery until about six weeks after the uniform infection was observed in the plot back of the Station buildings. This suggests the possibility that the November norther may have brought inoculum from the wheat fields farther north and that very little inoculum has been brought in since that time. As a matter of fact, no characteristic northers were experienced in this part of Texas from the middle of November until February 20.

On February 21 several spores of both stem and leaf rust were trapped on microscope slides exposed during a norther. If any of the spores in this shower were viable, infection centers of stem rust in the second generation should make their appearance within the next few days, since it usually takes from 12 to 14 days per generation under our February and early March conditions.

Our experimental flax seedings on the south Texas stations, in common with commercial seedings amounting to about 20,000 acres, have survived the winter in good condition. The greater part of the crop is now in full bloom except in the lower Rio Grande Valley, where harvesting of early seeded flax is expected to start this week.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (April 1)

Ample soil moisture and favorable temperatures in March resulted in cereals making very rank growth, so rank that drought injury is likely to occur if generous amounts of rainfall do not continue. Early Blackhull from September 15 seedings is about 14 inches tall and is in the second joint stage while Turkey types have hardly reached the first joint stage. October 15 seedings, however, are not far behind inasmuch as Early Blackhull has started jointing. Fortunately, growth in most farm fields is not so far advanced.

No rust pustules have been located in northwestern Oklahoma nor have there been reports of rust in southwestern Oklahoma, although leaf rust spores apparently wintered over in central and north-central Oklahoma since leaf rust in farm fields has been evident in those areas for several weeks. Wheat growth is more advanced there than in other parts of the State and has been so most all winter largely because of favorable fall rains and a mild winter.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (March 16)

March came in "like a lamb" but the mild weather lasted only about 2 days. Cold winter weather has prevailed during most of the first half of March. Snow during this period amounted to 0.44 inch of precipitation. Considerable drifting occurred so that much of the new snow piled up over the older snow in sheltered places. Most of the ground even in the most exposed locations has some snow covering. Temperatures above freezing were recorded only on three days. A little thawing occurred on these days but most of the water from the melting snow went into the ground or froze into ice before it had a chance to run far. It is rather unusual to have most of the winter snow remaining unmelted by the middle of March.

The maximum temperatures were 40° on the 2d and 11th and the minimum -7° on the 5th. Temperatures below zero were also recorded on the 6th, 14th, and 15th.

(April 3)

Warm spring weather prevailed during the last half of March in contrast to the winter weather of the first half of March. Rapid thawing of snow occurred on the 18th and continued throughout the following week.

The Heart River rose above flood stage the night of the 20th and remained at a high level for about a week, flooding lowlands south and west of Mandan. The dike, which was completed last fall to cut off a bend in the river from which the overflow flooded lowlying parts of Mandan twice in 1938, prevented serious flooding in Mandan. A little flooding occurred in the extreme southwestern section of Mandan the night of the 22d, when water flowed over low places in the dike for a short time following the breaking of an ice gorge west of Mandan.

The Missouri rose above the flood stage on the 26th and reached the highest level since 1929, driving about 1,000 people from their homes. Most of the people were housed and cared for in the Bismarck Memorial building until the water subsided and they could return to their homes. For over three days the water remained above flood stage. On March 30 the river was back within its banks between Mandan and Bismarck but some lowlands are still covered with water left when the flood receded.

On March 31 land for the wheat nursery was leveled and duck-footed in preparation for seeding. Possibly some wheat nursery seeding will be done before the end of this week if weather permits, although it is probable that no seeding will be attempted until Monday, April 10.

The maximum temperature during the last half of March was 78° on the 24th and the minimum -11° on the 16th. Only a trace of precipitation was recorded during this period.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (April 1)

After a cold early March, spring came suddenly and the snow disappeared during the week beginning March 19. Snow melted too fast to soak into the ground and moisture lost by run-off was considerable. Soil erosion was evident in some fields, showing the need of soil-conservation practices in this locality.

The precipitation for March was 0.46 inch, mostly snow early in the month. The precipitation was thus slightly below normal. The temperature rose from -13° on the 15th and 17th to 74° on the 24th and 25th. The mean for the month was 22.5° or about 3° below normal. The average wind velocity was but 5 miles per hour.

Seed is being prepared and if the present weather continues seeding should begin by the middle of next week.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (April 3)

No subzero weather was experienced in northern Utah until January. Six days of January and 9 days of February showed minimums below zero with a low of -18° on the 2d of February. Snowfall during these two months was high but it disappeared in a few days during the middle of March. Since March 22 conditions have been exceptional for this area. Considerable spring work has been completed and trees are near leafing at this time.

Winter wheat appears to be in excellent condition at this time. During the period of cold temperatures the ground was covered with from two to three feet of snow. Since the snow disappeared no cold weather has been experienced. Much of the spring seeding has been completed during the past week. A heavy shower on April 2 will delay seeding of the remainder of the wheat and oats on the Central Experiment Farm.

The mean temperatures for January and February were 26.5° and 22°, respectively, as compared to average means of 23.8° and 29.2°. Precipitation totals were 2.34 and 0.80 inches for the months of January and February, respectively, as compared to 1.33 and 1.40 inches as 19-year averages.

The precipitation for March, as reported at the College, is 0.89 as compared to a mean of 2.03. Temperatures in March were above normal.

Even though the snow prospects were considered good a month ago, with the early breaking of spring moisture shortage could easily become acute.

CALIFORNIA

BIGGS RICE FIELD STATION, BIGGS (Rice Agronomy, L. L. Davis) (April 1)

The Sacramento Valley has experienced a very dry winter. Rainfall at the Station since the first of September has totaled 9.58 inches, whereas the normal precipitation for the corresponding period is 17.33 inches. Some sections of the rice area may have to contend with a shortage of irrigation water before the end of the crop season. A serious water shortage is not expected in the district in which the Station is located; however, the snowfall in the watershed is very low this year.

Seedbed preparation for rice in this district has begun, which is earlier than for several years. The anticipated acreage for 1939 is 127,000 for California. A heavy carry-over of the 1938 crop is expected and at present prospects for an increase in the price of rice are poor. These conditions make the outlook for the rice growers rather discouraging.

UNIVERSITY FARM, DAVIS (Cereal Agronomy, C. A. Suneson) (March 31)

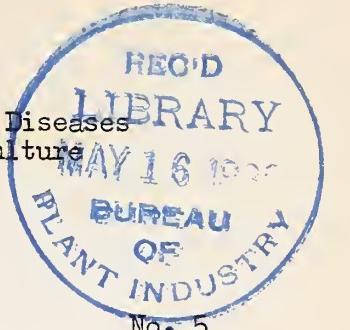
This may prove to be the driest of 67 crop years at Davis. Precipitation for the crop year totals only 6.41 inches compared with 26 inches last season and a normal for the July-March period of 16.30 inches. Early in March most grain fields were burning badly. A rain of 1.5 inches on March 8 was very timely, but all grain not on good fallow (or irrigated) is in distress again. The entire Sacramento Valley is similarly affected.

Barley mildew (Erysiphe graminis hordei) is more severe and general than ever noted by any of the California station workers. The disease is causing greater damage in fields suffering from drought, although it is equally abundant in irrigated fields. Only the top 3 or 4 leaves are not completely covered and light infections occur even on the flag leaf. This heavy infection on normally seeded barley is matched by one on late-sown barley which gives every indication that these plants will be killed soon.

Experimental and seed increase seedings of cereals have all been irrigated during March. Numerous abnormalities in heading sequence as a result of drought are indicated. Wild oats are showing remarkable adaptation to the moisture deficiency, having headed about 10 days ago, whereas of the comparably germinated experimental varieties none is likely to head for 15 days.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

April 25, 1939

No. 5

Personnel (Apr. 11 - 25) and Field Station (Apr. 1 - 15)

PERSONNEL ITEMS

Mr. L. W. Kephart spent April 14, 15, and 16 collecting weed roots near State College and Bedford, Pa., for use in cooperative studies in the investigations of noxious weeds.

Dr. L. J. Stadler attended the meetings of the National Academy of Sciences held in Washington, D. C., April 24 and 25.

RECENT PUBLICATIONS

James F. Couch, Reinhold R. Briese, and J. H. Martin. Hydrocyanic Acid Content of Sorghum Varieties. *Jour. Wash. Acad. Sci.* 29(4): 146-161. April 15, 1939. (Cooperative investigations of the Pathological Division, Bureau of Animal Industry, and the Division of Cereal Crops and Diseases, Bureau of Plant Industry.)

A. S. Crafts and R. S. Rosenfels. Toxicity Studies with Arsenic in Eighty California Soils. *Hilgardia* 12(3): 177-200, figs. 1-3. January 1939. (Cooperative project on control of noxious weeds conducted by the California Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

R. W. Jugenheimer. Hybrid Corn in Kansas. *Kans. Agr. Expt. Sta. Circ.* 196, 20 pp., illus. (incl. map). February 1939. (Cooperative investigations of the Department of Agronomy, Kansas Agricultural Experiment Station, and the Division of Cereal Crops and Diseases.)

M. M. Rhoades. Recent Linkage Studies in Maize. VI. White Sheath-3 (ws₃). *Genetics* 24(1): 62-63. January 1939.

M. M. Rhoades and Virginia H. Rhoades. Genetic Studies with Factors in the Tenth Chromosome in Maize. *Genetics* 24(2): 302-314, figs. 1-2. March 1939.

R. S. Rosenfels and A. S. Crafts. Arsenic Fixation in Relation to the Sterilization of Soils with Sodium Arsenite. *Hilgardia* 12(3): 203-229, figs. 1-6. January 1939. (Cooperative project on control of noxious weeds conducted by the California Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

E. R. Sears. Amphidiploids in the *Triticinae* Induced by Colchicine. *Jour. Heredity* 30(2): 38-43, figs. 1-4. February 1939. (Cooperation between the Division of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.)

N O T E

Dr. M. C. Merrill, Chief of Publications, U. S. Department of Agriculture, reminds Bureau editors that his office at times receives manuscripts for publication typed on very thin paper. He suggests that as such manuscripts are exceedingly difficult to read and edit a good bond paper be used, or at least paper that has the desired weight and quality if the material is intended for printing at the Government Printing Office. Otherwise it may be necessary to return the copy for typing on suitable paper.

A.H.B.K.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau

April 20, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

With the appointment of Mr. P. V. Cardon as Assistant Chief of the Bureau, Mr. H. L. Westover will be Acting in Charge of the Division of Forage Crops and Diseases.

Sincerely yours,

E. C. Auchter
Chief of Bureau.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau
B. P. I. Memo. 1034.

April 17, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

From time to time, the Civil Service Commission announces examinations for a wide range of specialties, many of which are in response to requests initiated in this Bureau, and desired to establish registers from which vacancies in the Bureau will be filled. Some examinations are held to meet requirements of other Bureaus, but are of such a character that they can be used advantageously to meet specific needs arising in this Bureau.

It is suggested that all announcements of examinations to be held by the Civil Service Commission be scrutinized carefully, and whenever applicable called to the particular attention of members of your staff who may not have a Civil Service status. Agents are not entitled to retirement privileges. By passing an appropriate examination, and then being given a Civil Service appointment, they become eligible for retirement.

Occasionally, sub-professional examinations are held which could be passed by some of our field workers and, if passed and reached for appointment, would permit a retirement status. This is particularly true of unskilled laborers who through experience are qualified to do more responsible work, but must be continued on unskilled labor assignments because they do not have Civil Service status. Through Civil Service appointment, they would also become eligible for retirement privileges.

It is urged that these matters be watched closely. If employees receive Civil Service appointments, they become eligible for retirement privileges, and may receive credit for previous service through deposit in the Retirement Fund of appropriate salary deductions.

Very sincerely,

E. C. Auchter
Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins)
(Apr. 7)

Weather conditions during the month of March were for the most part favorable for crops. The mean temperature for the month was 59.3°, or 3.5° above normal. The maximum temperature was 83° and the minimum, 29°. The precipitation amounted to 1.96 inches, or 0.37 inch below normal.

Small grains are in excellent condition at present. A very dry season last fall caused late emergence of the crop but since January 1 ample moisture and moderate temperatures have resulted in slow, favorable growth. Spring-sown oats were damaged somewhat by a freeze in February but for the most part stands will be satisfactory. Leaf rust of wheat, which usually has reached epidemic proportions by this time of the year, has made very little progress to date. The first infection was found about March 15, but at this writing only the most susceptible varieties are infected and only to a small degree.

Since returning to Denton, no reports have been received of crop conditions in western Texas. Newspaper reports reported general rains over the State this past week; at Amarillo there was more than 1 inch and at Adrian 3 inches.

(Apr. 15)

Weather conditions during the first part of April have been for the most part cool, windy, and cloudy. A minimum of 32° with a light frost was recorded on the 5th. Frequent strong winds from the south have occurred.

Crown rust of oats (Puccinia coronata) was found on April 14, which is 10 days later than last year but otherwise one of the earliest infections on record at this Station. Leaf rust of wheat continues to spread rather slowly.

(Apr. 20)

Stem rust of wheat was found about three miles south of Denton on April 19 by Mr. Wallace Butler, Agent in Stem Rust Investigations. The writer has since searched for rust over a considerable area in the county but no further points of infection can be found. This initial infection must have occurred some time ago as several generations have been completed. No wheat in this area emerged until late in November and after emergence was subjected to another 45 days of very dry weather in which stands were reduced by drought. Favorable precipitation and temperatures soon after January 1 gave wheat its first start. Any suggestion as to when infection occurred would be simply a guess. Reference to meteorological records show that there were a number of days in January when temperatures were high enough to permit infection. The mean temperature in February was 44.7° or 3.8° below normal, indicating unfavorable conditions for infection. March mean temperatures were 3.5° above normal with morning temperatures sufficiently high on several mornings to permit infection during the time the dew was on plants.

The finding of stem rust on this date is earlier than any previous record of stem rust in this area. Since the infection is not general, this initial infection may not be of marked importance.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Apr. 17)

Cool weather accompanying three showers (totaling 4.38 inches) during the first week of April checked slightly the rank growth of wheat. Even so, wheat sown September 15 is standing 18 to 24 inches high and lodges severely after light rains. Some lodging is also evident in the late-seeded wheat. The culms are apparently in so succulent a condition that even normally stiff-strawed varieties show little resistance to lodging. Very likely much of this succulent material will be subject to drought injury if dry weather and hot winds arrive in May and June.

The proximity of the heading season is evidenced by occasional culms of Early Blackhull in the early boot stage. With continuous warm weather Early Blackhull would be expected to head by the first of May. Most varieties though are showing no sign of heading.

Weather in the Great Plains is difficult to predict. Several warm days brought out the flowers of iris, tulips, spirea, redbuds, apricots, peach, apples, and other fruit on the Station, even a straw hat or two, but strong north winds on April 16 and 17 caused the resurrection of caps, woolens, double trousers, and shooeskins (if the latter were available). Frost is predicted for tonight.

The minimum temperature during the first half of April was 29° on the 7th; the maximum was 86° on the 10th, and the mean was 54.2°.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Apr. 10)

March was favorable for the development of winter wheat in most parts of Kansas and the crop began rapid spring growth. For the first time in several years March rainfall was above normal in many localities, a condition that greatly favored the development of wheat plants that barely emerged last fall or came up during the winter. As a consequence, many fields that scarcely showed green during the winter now seem to have full stands. However, in many cases the fields, owing to late emergence of many plants, look as though they had been resown to spring wheat.

Crop conditions in south-central Kansas are excellent owing to frequent rains or snows during the fall and winter. Winter wheat in that area has made abundant top growth and now is jointing. Leaf rust overwintered there in considerable abundance and now is easy to find in nearly every field. Not much overwintering of leaf rust occurred to the westward or eastward of the area and it seems clear that there was an island of early developing winter wheat in south-central Kansas and adjoining parts of Oklahoma on which leaf rust overwintered and from which it may spread rapidly in all directions.

Sowing of the spring-wheat rust nursery was completed on March 25 although parts of it were sown as early as March 10. The oats crown and stem rust nurseries were sown during the last week in March. About 1,900 rows were sown in these nurseries and nearly 1,200 are occupied by space-sown double crosses in the F₅ generation.

Greenhouse rust work is nearly completed for this year and much of the space is now being utilized for building up rust cultures for hypodermic inoculations in the rust nurseries.

NEBRASKA

AGRICULTURAL EXPERIMENT STATION, LINCOLN (Wheat Improvement, K. S. Quisenberry) (Apr. 20)

Seeding of the oat and barley nurseries started on March 22 and was nearly completed by March 25, when all field work was stopped by rain and cold weather. The remaining material, mostly head rows, was seeded on April 8 and 10. Germination and emergence was very slow but most of the oat and barley rod rows were up by April 9. On the morning of April 12 a minimum temperature of 22° was recorded; which caused some damage to emerged material. Among the oat varieties most seriously damaged were several Burt selections, Boone, Morota x Bond (C.I. 3514), Erban, and Vanguard. Most strains containing Fulghum characteristics came through in good shape. Striking differences were observed among the barley selections.

The oat varieties in plots were seeded on March 24 and did not emerge until April 16, late enough to miss the freeze. The barley and spring-wheat varietal plots were seeded on April 8 and 10 and have not emerged as yet, owing to continued cool weather.

Winter wheat came through the winter in good shape and is making satisfactory growth at present. Some killing was recorded in the eastern winter hardiness nursery and among some of the winter x spring lines.

During the period of April 2 to 10 a trip was made to the western part of the State. At North Platte, winter wheat in both nursery and plot tests looks good and there is almost no winter-killing. At Alliance, the winter wheat nursery is excellent, killing being present in a few of the more tender lines. The moisture supply at Alliance is normal or above for that station. At Valentine, the winter wheat plots were a total failure.

Winter wheat in Nebraska has made a good recovery except for a strip through the central part of the State. In the vicinity of Hastings the crop looks bad at this time and many fields have been plowed up. In the winter wheat sections of the west end of the State, the crop looks very good. If anything, there is too much growth but there seems to be plenty of moisture as yet.

Dr. L. J. Stadler visited Lincoln on April 17 and 18 and delivered a lecture to Sigma Xi.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Apr. 17)

Generally cold, dry weather prevailed during the first half of April. Freezing temperatures were recorded every night from the 4th to the 13th. The maximum temperature was 68° on the 3d and the minimum 10° on the 11th. Total precipitation was 0.46 inch, of which 0.43 inch was reported on the 15th.

The wheat varietal plots and drilled increase plots were sown April 12. The Regional, Intrastate, Elimination, and wheat rust nurseries were sown April 14 and 15.

The ground is too wet for seeding today but seeding will be resumed as soon as weather permits.

There was an additional precipitation of 0.12 inch on April 16 and showers today may add a little more. This, together with the 0.43 on the 15th, should provide sufficient moisture for germination of all seed sown to date.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith)
(Apr. 18)

Repeated freezing weather has delayed seeding beyond the average date. The ground is being prepared for seeding the field plots and the seeding of spring-wheat varieties is expected to begin tomorrow. Intermittent seeding has been done in this section since a few warm days in March started field work which was interrupted many times by frozen ground.

Precipitation in the form of rain and light snow supplied 0.82 inch of moisture on April 16 and 17. This will insure moisture to germinate spring-sown grain and aid the survival of winter wheat, which shows a thin stand in nursery and field plots.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

May 10, 1939

No. 6

Personnel (Apr. 26 - May 10) and Field Station (Apr. 16 - 30)

PERSONNEL ITEMS

Mr. A. C. Dillman returned May 2 after spending a month at Fargo, N. Dak., and a month in the flaxseed-producing areas of southern California and south Texas. He reports that California has become an important flaxseed-producing State; the acreage now being harvested is estimated at about 100,000 acres. In the Imperial Valley somewhat over 40,000 acres will be harvested and the average yield will be approximately 20 bushels per acre, although many farmers produce from 25 to 35 bushels.

Following the suggestion of Mr. L. G. Goar, superintendent of the Imperial Valley Experiment Station, a number of farmers have grown flax in cultivated rows as a means of weed control. Somewhat over 1,000 acres were grown in this manner and yields equal to those from the best broadcast plantings are expected.

In south Texas some 12,000 to 15,000 acres of Bison flax are being harvested, the yields ranging from 8 to 16 bushels. The growing season was exceptionally dry and the yield was reduced from lack of moisture, especially in the area from San Antonio to Beeville. The total precipitation from November to March, inclusive, was only 5.55 inches at San Antonio and 7.29 inches at Beeville. College Station was more favored, 15.75 inches having been recorded there during the same period. Most of the flax crop was harvested by direct combine during the last week of April. The dry harvest season was exceptional for this area and the crop was harvested under favorable conditions, the moisture content of the seed ranging from 7 to 9 percent for the most part. Some 5,000 acres of Bison flax were certified for seed by the State Seed Department. It is probable that 100,000 bushels or more will be retained for seeding this fall. A price of \$1.50 to \$1.60 per bushel was received by growers for this, their first commercial crop.

Dr. H. B. Humphrey left Washington Thursday, April 27, and visited Gainesville and Quincy, Florida, and Tifton, Georgia. At these stations observations were made on cooperative cereal nurseries, especially of oats, and notes were taken on the incidence of stem rust and leaf rust of wheat and stem rust and crown rust of oats.

Mr. H. H. McKinney left Washington April 15 to spend 10 days in Illinois and Indiana in taking field notes on experimental plots of mosaic disease of wheat. Wheat varieties, selections, and crosses are being tested for resistance to mosaic in Clark, Mason, and Tazewell Counties, Illinois, and in Tippecanoe County, Indiana, in cooperation with the State agricultural experiment stations. Some of the resistant varieties and selections show little or no sign of disease. Others manifest a mild expression in a high percentage of the plants, but the disease is so mild that little if any reduction in yield is expected. Conditions in Clark County, Illinois, were especially favorable for making selections, as the disease was uniformly severe in all susceptible controls.

Mr. J. W. Taylor and Dr. H. A. Rodenhiser spent part of April 26 at State College, Pa., to inspect cooperative nursery plantings and to plant the spring wheat smut nursery. Returning to Washington by way of Harrisburg it was observed that in the Nittany Valley and at the higher altitudes there was a very high percentage of heaving. However, at the lower altitudes in Lancaster County there was very little heaving and wheat was in excellent condition:

RECENT PUBLICATIONS

Hurley Fellows and C. H. Ficke. Soil Infestation by Ophiobolus graminis and Its Spread. Jour. Agr. Research 58(7): 505-519, fig. 1. April 1, 1939. (G-1125). (Cooperative investigations of the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Merle T. Jenkins. Seed Corn. U. S. Dept. Agr., Farmers' Bull. 1822, 14 pp., 7 figs. April 1939.

TRANSLATIONS

Two copies (the ribbon copy and one carbon copy) of each translation made for members of the Division staff should be furnished the Division as soon as the copies are available. The ribbon copy will be deposited in the Department of Agriculture Library; the carbon copy will be filed in the Division of Cereal Crops and Diseases. When several copies are made and distributed, a list of persons to whom the copies are sent and the dates of sending should be furnished this Division for its records. Compliance with this request will be greatly appreciated.

A.H.B.K.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

AGRICULTURAL EXPERIMENT STATION, COLLEGE STATION (Wheat Improvement, E. S. McFadden) (May 4)

The writer and Dr. P. C. Mangelsdorf, of the Texas Agricultural Experiment Station returned on April 23 from a trip to the experiment stations at Weslaco, Beeville, and Angleton for the purpose of inspecting the flax and cereal experiments conducted at those stations. On April 21, they attended an all-day "flax clinic" on the Beeville station where nearly every phase of flax production and utilization was discussed. The meeting was attended by approximately one hundred South Texas flax growers, representing a territory extending from Houston to Kingsville. In addition to "local talent", the meeting was addressed by several out-of-State speakers, including A. C. Dillman, Washington, D. C., O. H. Wiley, Fredonia, Kans., and R. H. Ramsey, El Centro, Calif.

While on the above mentioned trip, special attention was given to the status of the various cereal rusts. Leaf rust of wheat was very much in evidence wherever wheat was found, but stem rust of both wheat and oats was largely confined to an occasional infection center. Even crown rust of oats was not found to be uniformly distributed. There was a fairly uniform infection of leaf rust of barley in nursery material at Beeville and Weslaco. At College Station, leaf rust of wheat is very prevalent on all susceptible material, but stem rust of wheat is just beginning to spread from a single infection center along the south side of the nursery. Several infection centers of crown rust have appeared, but no stem rust of oats has been found to date.

There has been extreme drought in the greater part of South Texas for the past two months, the prevailing winds being from the north and west. This undoubtedly has had something to do with the slow development of the cereal rusts this year. However, the paucity of initial inoculum has also been a contributing factor. In spite of the cool, dry weather, all the rusts have been able to develop profusely in the immediate vicinity of the initial infection centers. It is quite evident from the failure of stem rust and crown rust to spread readily from the infection centers that the quantity of inoculum carried north by air currents so far this year has been far less than in the past four years.

Harvesting of the oat nursery at College Station started on May 1, which is about two weeks ahead of normal. All varieties are being ripened somewhat prematurely by dry weather. Flax has stood the drought much better than either wheat or oats.

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (Apr. 30)

Weather conditions in April have been favorable for the growth of small grains and rather unfavorable for the spread of rust. The mean temperature for the month was 63.3° or only -0.6° below normal. The maximum temperature was 88° and the minimum, 32° with a light frost on the 7th. The last killing frost of the season was recorded on March 2. The precipitation for the month was 5.02 inches, most of which was received in one rain on the 15th. The total precipitation at that time was 4.40 inches and was accompanied by considerable hail. As only the earliest barley and oat strains were heading at that time, damage was much less than would have occurred at a later date.

Although the mean temperatures for the month have been about normal, the month has been unusual in that temperatures have been uniformly cool throughout the month. These conditions, combined with a relatively small number of light dews, have not been favorable for the spread of rust. Leaf rust of wheat (Puccinia triticina) has continued to spread slowly so that on susceptible varieties the infection is sufficiently high to cause some damage. Crown rust of oats was found on April 14 but has spread very little. There is a light infection in most fields, however. Two infection centers of stem rust of wheat have been found in the county but there is no general infection yet. Loose smut of wheat and barley is prevalent and the amount of infection is higher than in any recent year.

The ripening of small grains in this section is about normal. Fall-sown oats and barley are approaching full head. Fields of Fultz and Red May wheat are also approaching full head, the Mediterranean types just reaching the heading stage.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (May 1)

Present indications are that harvest will be about two weeks earlier than in 1938. Early Blackhull was fully headed in plots and in the nursery on April 29 and heads of Quivira, Tenmarq, and other semiearly varieties are showing. Of course, it is possible that late rains may delay harvest as they did last year, although at present moderately dry weather is giving wheat a needed "set back."

Strong, hot south winds on April 23 fired plants in the more advanced fields from Woodward west to the central part of the Oklahoma Panhandle. Wheat in most farm fields is still young enough, however, to recover and will perhaps be in a better condition to resist possible dry periods in May.

Fall-sown cereals in the nursery still show evidence of irregular germination because of dry soil at seeding time. Wheat has perhaps never shown more irregular growth from farm to farm than is evident this year. The dry fall of 1938 prevented many fields from being seeded until very late, or if seeded they were late in emergence. Wheat on fallowed land or on land plowed immediately after harvest is almost without exception very rank as compared with wheat on land not so well prepared. In general, the condition of wheat in farm fields represents an unusually good picture of how well or how poorly the land was prepared prior to seeding.

No rust has been observed on the Station, although a single pustule of leaf rust was found on April 28 in a farm field about 12 miles southeast of Woodward.

Early varieties of fall-sown barley are standing approximately 14 inches high. Missouri Early Beardless and several early selections were fully headed on May 1.

Spring barley and spring oats are 6 to 8 inches tall and growing vigorously but show no evidence of heading.

Good stands of 5 flax varieties and 3 of safflower were obtained and both crops are progressing satisfactorily, but whether or not they will stand our summer heat and drought remains to be seen.

No rain fell during the last half of April, although the total for the month was 4.38 inches. The maximum temperature was 90° on the 23d. The minimum was 29° on the 6th and the mean was about normal, namely 56°.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust,
C. O. Johnston) (May 5)

The winter wheat crop in Kansas deteriorated badly during the past 10 days. On April 22, 23, and 24 a high, dry southwest wind blew continuously. Wheat in western and southwestern counties that had looked excellent before that time dried out very rapidly and the leaves now have turned brown and many of them have dropped off. Private crop estimators have lowered their estimates from 12 to 6 million bushels during the past week. Most of the wheat in the western half of the State, except that on fallow, now is in a precarious position. Should rains occur within the next few days, it appears that there will still be considerable wheat to harvest in the southern and southwestern counties and in certain localities elsewhere.

The writer does not remember ever having seen winter wheat in such a patchy condition over such a large area as exists this year. It is almost impossible to make a general statement as to the stage of growth of the crop at the present time. It all depends on the particular field of which one speaks. Even in the same field one often observes some plants approaching the boot stage while others seem to be still in the winter condition. There also is a large area in the west central part of the State where plants are still poorly anchored owing to dry top soil conditions. Such plants stand little chance of surviving the hot, dry weather.

Leaf rust which appeared at Manhattan on April 27 now is fairly well distributed throughout the eastern half of Kansas although it is not conspicuous anywhere as yet. Leaf rust can be found, as primary infections, in most fields in this vicinity after a few minutes search. Considerable infection has been present in south-central Kansas since late in the winter, but the spring has been so cold and dry that infection has not spread as rapidly as expected. So far no stem rust has been reported in Kansas.

Hypodermic inoculations with leaf rust in the winter wheat nursery are well advanced. Excellent infection has been obtained, and it is hoped that epidemic conditions can be produced through the use of the overhead irrigating system. Crown rust on the oat rust nursery and primary inoculations with stem rust of wheat were started today. Spring wheat and oats in the rust nursery have not made much growth owing to cold, dry weather.

An irrigating system was erected in the oat rust nursery on April 28. All of the rust plots now are covered with overhead irrigation.

FORT HAYS EXPERIMENT STATION, HAYS (Cereal Agronomy, A. F. Swanson)
(May 1)

The rainfall so far this spring has been inadequate and prospects are poor for wheat in this territory. The deterioration of the crop has been rather rapid the last 10 days. On cropped land the wheat stands are poor, much of it spring emergence, with the subsoil moisture low. Some fields are being abandoned. On fallowed land the prospects for wheat are still fairly favorable, but occasional fields show the effects of drought. There is considerable winter-killing in early-sown fields, seemingly from too much fall growth utilizing the stored moisture in the early part of the season.

Good stands of oats and barley were secured but the outcome of these crops will depend on additional rainfall, as in most fields the subsoil moisture is very limited.

Two-hundred and thirty-three high school and 4-H Club teams of boys and girls participated in the annual judging contest on April 28. This is the largest number of teams ever handled at this Station and taxed all facilities to the limit. The Annual Round-Up Feeders Day sessions were held on April 29 with a good attendance.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (May 2)

The rain of more than 1/2 inch on April 15 and 16, cold, windy weather during the next few days, and showers on April 24 and 25 made conditions unfavorable for continuous field work. Most of the main wheat nursery was sown April 20 to 22 but was not completed until the 25th. The oat and barley varietal plots were sown April 21. Seeding of the S.T.S. increase land was completed April 27. Seeding of increase plots of Merit and Pilot B on April 29 completed the wheat seeding for the season. All seedings made up to April 25 have emerged apparently with good stands. Russian thistles also have emerged with apparently heavier stands than usual.

The land for the flax varietal plots was duckfooted for the second time on May 1 to destroy weeds before seeding. The flax nursery land has also been prepared for seeding.

Hot, dry weather during the past few days have been favorable for plant growth but the soil surface is very dry and more moisture will soon be needed to maintain favorable growth.

The maximum temperature was 86° on the 30th and the minimum, 23° on the 20th. The precipitation was 0.28 inch. The total precipitation so far this year is 2.47 inches, or 0.4 inch below the average for the past 25 years.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Apr. 29)

Seeding of spring wheat and oats in varietal and smut nurseries was completed the past week, and replicated field plots of spring wheat, oats, and barley were seeded during the week ending April 24. The barley nursery will be seeded the first of next week.

Soil moisture conditions are better than usual at seeding time owing to 1.40 inches of precipitation in April, which is 0.22 inch above normal. The total for 1939 up to April 30 is 2.83 inches, which is exactly the 47-year average precipitation for this period at this Station.

The winter wheat nursery is in better than average condition, although the field plots of winter wheat are a very thin stand.

Early-sown wheat is emerging, hastened by temperatures above normal during the past week. Wheat seeding in this region is nearly finished for the season.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (May 1)

The spring of 1939 came several days in advance of average as shown by trees and vegetation in general. During the first 24 days of April there was only 0.1 inch of precipitation with considerable wind. The soil dried out excessively, causing suffering especially to winter wheat. A survey of the winter-wheat areas of Cache Valley indicated a spotted stand and considerable winter-killing in the low areas. In most fields little growth was observed by April 24. The winter wheat nursery at Clarkston looked especially poor in April. On the Central Experiment Farm winter wheat is nearly 14 inches high and the stands are excellent. A few commercial fields that emerged early last fall look fairly good but the late-emerged grain is spotted and thin. Two storms of considerable amount have been recorded since the observations were made of the winter wheat in Cache Valley.

Most all seeding of small grains was completed by April 7. The soil was in fair to good condition and emergence followed seeding within 7 to 9 days.

Stands and growth at this time are excellent with promise for a good season. Corn seeding probably will be completed this week if warm weather continues.

A mean temperature of 49.7° for April is 2.3° higher than average. A maximum of 85° was recorded on the 30th. There has been no frost since April 18. A minimum for the month of 14° was recorded on April 6.

The precipitation for April totaled 1.10 inches, which is only one-half the normal. The two storms on April 24 and April 30 were timely and valuable. The snow reserve is rapidly being depleted for the time of year, indicating little or no high water in the form of run-off.

Crops and plants in general are well along for May 1.



C E R E A L C O U R I E R

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Vol. 31

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No. 7

Personnel (May 11 - 25) and Field Station (May 1 - 15)

PERSONNEL ITEMS

The following members of the staff of the Division of Cereal Crops and Diseases were authorized to attend the National Meeting of the American Association of Cereal Chemists at Kansas City, Missouri, from May 22 to 26: Dr. M. A. Barmore and Mr. K. F. Finney, Manhattan, Kans.; Dr. E. G. Bayfield, Mr. T. F. Hartsing, and Mr. C. E. Bode, Wooster, Ohio; Dr. A. D. Dickson, Madison, Wis.; and Mr. S. R. Snider, Washington, D. C.

Dr. B. B. Bayles will leave Washington on May 31 on a trip that will include stops in West Virginia, Kentucky, Ohio, Indiana, Illinois, Tennessee, Missouri, Kansas, Nebraska, Michigan, Wisconsin, New York, and Pennsylvania. He will visit field stations to inspect cooperative cereal experiments, especially with wheat, and study varieties and hybrids in breeding nurseries.

Dr. H. B. Humphrey and Dr. B. B. Bayles left Washington on Sunday, May 14, on a cereal observation trip through the Carolinas, northern Georgia, and Tennessee. Together they visited Raleigh, N. C., where they consulted with experiment station officials and collaborators. They proceeded from Raleigh to Hartsville, S. C., where they spent a busy and interesting day on the Coker Seed Farms. The next stop was Experiment, Ga., where notes were taken on cooperative wheat and oat nursery studies. On the way from Hartsville to Experiment and from Experiment to Knoxville, Tenn., many fields of wheat, oats, and barley were inspected and specimens collected. From Knoxville, Dr. Humphrey proceeded to the West Tennessee Experiment Station at Jackson, thence to Fayetteville, Ark. At both stations he conferred with experiment station officials concerning cooperative research on oat improvement. He returned to Washington on Wednesday morning, May 24.

Dr. Bayles, having left Dr. Humphrey at Knoxville, proceeded to Statesville, N. C., and thence to Blacksburg, Va., to look over cooperative experiments with wheat and to confer with Station officials.

Dr. J. H. Martin left Washington on April 28 on a trip to Lawton and Woodward, Okla., and Chillicothe, Tex. Planting plans and seed supplies for the current season were arranged. He returned to Washington on May 12.

Miss Mary L. Martini left Washington on May 17 on her annual trip in the barley areas of Wisconsin, Minnesota, Idaho, and Utah to take notes and compile data on cooperative barley experiments.

Dr. S. C. Salmon left Washington May 20 to inspect the cooperative weed research program in Ohio, Indiana, Illinois, Iowa, Minnesota, Nebraska, Kansas, Oklahoma, and Texas. He will be in the field about three weeks.

Dr. G. A. Wiebe and Mr. J. W. Taylor left Washington on May 14 on a trip in Virginia, Tennessee, Georgia, South Carolina, and North Carolina to inspect barley fields and to look over cooperative barley work at the State agricultural experiment stations. They report very little winter-killing in barley and, in general, a better than average crop. The acreage of barley in the States visited is increasing. They returned to Washington May 25.

RECENT PUBLICATIONS

A. S. Crafts. The Relation of Nutrients to Toxicity of Arsenic, Borax, and Chlorate in Soils. Jour. Agr. Research 58(9): 637-671, figs. 1-12. May 1, 1939. (G-1128) (The experiments herein reported were conducted cooperatively by the Division of Cereal Crops and Diseases and the Botany Division of the California Agricultural Experiment Station, at Davis, Calif.

Annie M. Hurd-Karrer. Antagonism of Certain Elements Essential to Plants toward Chemically Related Toxic Elements. Plant Physiol. 14(1): 9-29, illus. January 1939.

J. G. O'Mara. Observations on the Immediate Effects of Colchicine. Jour. Heredity 30(2): 35-37. February 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.)

L. F. Randolph and Harold E. Fischer. The Occurrence of Parthenogenetic Diploids in Tetraploid Maize. Proc. Nat. Acad. Sci. 25(4): 161-164. April 15, 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the New York (Cornell) Agricultural Experiment Station.)

Luther Smith. Mutants and Linkage Studies in Triticum monoccicum and T. aegilopoides. Missouri Agr. Expt. Sta. Research Bull. 298, 26 pp., 22 figs. April 1939. (Cooperative investigations of the Field Crops Department, Missouri Agricultural Experiment Station, and the Division of Cereal Crops and Diseases.)

USE OF THE FRANKING PRIVILEGE

The following extract from the Congressional Record of April 27, 1939, quoting an amendment to the Treasury-Post Office bill is self-explanatory. The amendment will become a law.

Attention is directed to the necessity of exercising care in using the franking privilege. (See paragraphs 1645, 1646, and 1647, Department Regulations.)

"Sec. 6. On and after July 1, 1939, no executive department or independent establishment of the Government shall transmit through the mail, free of postage, any book, report, periodical, bulletin, pamphlet, list, or other article or document (except official letter correspondence, mail concerning the sale of Government securities, and all forms and blanks necessary in the administration of such departments and establishments), unless a request therefor has been previously received by such department or independent establishment or such transmission is required by law. For each quarter, beginning with the quarter commencing July 1, 1939, the head of each independent establishment and executive department (other than the Post Office Department) shall submit to the Postmaster General, within 30 days after the close of the quarter, a statement of the weight of the mail matter by classes of mail that the independent establishment or department has transmitted free of postage during such quarter, and he shall also certify to the Postmaster General at the end of each such quarter that nothing was transmitted through the mail free of postage by the independent establishment or department in violation of the provisions of this section: Provided, That nothing herein shall be construed to prohibit the mailing free of postage of lists of agricultural bulletins or of lists of public documents which are offered for sale by the Superintendent of Documents: Provided further, That this prohibition shall not apply to the transmission of such books, reports, periodicals, bulletins, pamphlets, lists, articles, or documents to educational institutions or public libraries."

H. S. Smith
Junior Administrative Assistant.

UNITED STATES DEPARTMENT OF AGRICULTURE
Office of Director of Personnel
Washington

May 8, 1939.

No. P-8

MEMORANDUM FOR CHIEFS OF BUREAUS AND OFFICES

Subject: Complaints regarding non-payment of debts.

Paragraph 1546 of the Department regulations provides that although the Department will not permit itself to be used as a collection agency, it will not consider as a fit employee anyone who contracts a just debt and then without sufficient excuse neglects to make payment. It provides further that upon receipt of a complaint of non-payment of a debt, the complaint will be referred to the proper chief of bureau, who will obtain a report in writing from the employee concerned, which, together with a summary of the conclusions reached by the chief of bureau in the matter, will be made a part of the official record and considered by the bureau committee on efficiency and promotions in making up the efficiency register. It also provides that the chief of bureau may recommend to the Secretary that charges be preferred against an employee who contracts a just debt and then without sufficient or reasonable cause, neglects or avoids payment thereof.

In the past there have been many cases where the bureau has obtained the required statement from the employee and has transmitted it to this office without any indication that a real effort has been made to obtain complete details and advise the employee as to what would be expected of him. In other words, it appears that in many cases, the bureaus have merely accepted whatever statement has been submitted by the employee. In some cases investigated by the Division of Investigations of this office, it has been determined that the employees concerned have submitted false or misleading information with respect to their indebtedness and ability to pay, and have been evading their responsibilities without justification, knowing that their salaries were not subject to attachment. The number of complaints received by the Department relative to the non-payment of debts is becoming increasingly embarrassing, and the handling of correspondence relative to these matters is consuming entirely too much time.

It is the opinion of this office that the first responsibility in matters of this kind rests with the bureau concerned, and that the bureau should make every effort to adjust them and should insist upon its employees' paying or making satisfactory arrangements to pay their just debts in all cases except those where the employees concerned can show conclusively that they are financially unable to do so. In cases where the amount involved is in dispute, it has been the policy of the Department not to attempt to render a decision as to the proper amount, but to insist upon payment, in installments if necessary, of the amount which the employee admits is due from him. In cases where judgments have been secured, it has been the policy to insist that the employee arrange to satisfy the judgment or take action to have it modified or set aside.

Numerous cases have been referred to this office where the employees concerned have made definite promises to pay specific amounts on designated dates, and have failed to keep their promises. Such cases should be investigated promptly by the bureaus, and unless the employee has an adequate reason for his failure, he should be required to keep his promise.

If a bureau is unable to effect a satisfactory settlement in any case, the file should be submitted to this office with an appropriate recommendation. In all cases where judgment has been secured, the Bureau should notify this office as to the final disposition.

(Signed) Roy F. Hendrickson.
Director of Personnel.

ANNUAL REPORT OF PUBLICATIONS AND MANUSCRIPTS
DIVISION OF CEREAL CROPS AND DISEASES
CALENDAR YEAR 1938

In the calendar year 1938, 142 articles, papers, and abstracts were published in the various series of Department publications, in publications of cooperating State agricultural experiment stations, in private journals, or as mimeographed unnumbered publications. In 1938, 137 manuscripts were submitted for publication. There remain unpublished as of December 31, 1938, 20 manuscripts submitted in 1938 and 6 submitted in 1937.

GENERAL OR MISCELLANEOUS

Atkins, I. M. Small Grain Investigations. In Texas Agr. Expt. Sta. Ann. Rept. (1936/37) 50: 207-212. [1938] (Cooperative investigations of the Division of Cereal Crops and Diseases and the Texas Agricultural Experiment Station at Texas Substation No. 6, Denton.)

Boyle, L. W., and McKinney, H. H. Local Virus Infections in Relation to Leaf Epidermal Cells. *Phytopathology* 28(2): 114-122. February 1938.

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Hurd-Karrer, Annie M. Relation of Sulphate to Selenium Absorption by Plants. *Amer. Jour. Bot.* 25(9): 666-675, illus. November 1938.

Johnston, C. O., and Brooks, Travis E. Kansas Mycological Notes, 1937. *Kans. Acad. Sci. Trans.* 41: 121-123. 1938. (Cooperative investigations of the Kansas Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

Lefebvre, C. L., and Hansing, E. D. Kansas Mycological Notes, 1936. *Kans. Acad. Sci. Trans.* (1937) 40: 69-74. 1938. (Cooperative investigations by the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Lefebvre, C. L., and Hansing, E. D. Observations on the Loose Kernel Smut of Johnson Grass. (Phytopath. Note) *Phytopathology* 28(2): 151-152, illus. February 1938.

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Martin, Lawrence F., and McKinney, H. H. Tobacco-Mosaic Virus Concentrated in the Cytoplasm. *Science* 88(2289): 458-459. November 11, 1938. (Cooperative investigations of the Food Research Division, Bureau of Chemistry and Soils, and the Division of Cereal Crops and Diseases, Bureau of Plant Industry.)

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McCall, M. A. The Relation of the National Agricultural Program to Agronomic Betterment. *Jour. Amer. Soc. Agron.* 30(3): 171-178. March 1938.

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Moore, M. B. The Minnesota Seed Grain Treater. U. S. Dept. Agr. Misc. Pub. 330, 6 pp., illus. October 1938.

Peterson, Paul D., and McKinney, H. H. The Influence of Four Mosaic Diseases on the Plastid Pigments and Chlorophyllase in Tobacco Leaves. *Phytopathology* 28(5): 329-342. May 1938.

Quinby, J. R., and Stephens, J. C. Small Grain. In *Texas Agr. Expt. Sta. Ann. Rept.* (1936/37) 50: 258. [1938] (Cooperative investigations of the Division of Cereal Crops and Diseases and the Texas Agricultural Experiment Station.)

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BARLEY

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Dickson, Allan D., Shands, H. L., and Burkhardt, B. A. Barley and Malt Studies. IV. Experimental Malting of Barleys Grown in 1936 and Summary Data for Three Years, 1934-36. *Cereal Chem.* 15(2): 133-168. March 1938. (Based on cooperative investigations between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station. The cooperative investigations include the agricultural experiment stations of California, Colorado, Illinois, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin, where the uniform barley varietal series are grown each year.)

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Hill, D. D., Stephens, D. E., Richards, D. E., Hutchison, Roy E., and Martin, J. F. Barley Production in Oregon. Oreg. Agr. Expt. Sta. Bull. 355, 34 pp., illus. June 1938. (Cooperation between the Oregon Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

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Tapke, V. F. Influence of Environment, After Seedling Emergence, on Covered Smut in Barley. (Phytopath. Note) Phytopathology 28(5): 370-371. May 1938.

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and Stringfield, G. H. Cooperative Production of Foundation Stocks for Certified Corn Hybrids in Ohio. *Jour. Amer. Soc. Agron.* 30(2): 145-149, illus. February 1938. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Ohio State University and the Ohio Agricultural Experiment Station.)

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Miles, S. R. Indiana Corn Performance Tests. Results for 1937. U. S. Dept. Agr., Bur. Plant Indus., Div. Cereal Crops and Diseases [Unnumb. Pub.] 42 pp. [1938] [Mimeographed at Purdue University Agricultural Experiment Station.] (Cooperative investigations of the Division of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

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Smith, Glenn M. Sweet Corn Trials at the Purdue University Agricultural Experiment Station, 1938. U. S. Dept. Agr., Bur. Plant Indus., Div. Cereal Crops and Diseases [Unnumb. Pub.] 14 pp. [1938] [Mimeographed at the Purdue University Agricultural Experiment Station.] (Cooperative investigations of the Division of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

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FLAX

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FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. Mitchell Jenkins)
(May 16)

By the end of April, work on the Station was farther advanced than usual. If the weather permits, seeding operations will be completed ten days to two weeks earlier than in past years.

Because of the light rainfall, most farmers completed rice seeding in April. In order to secure stands, however, it was necessary to flush most fields one or more times. Fortunately, very little seedling blight appeared to reduce stands and necessitate reseeding.

The weather was exceptionally dry the greater part of April. Only a few light showers fell in the first 26 days. On the 27th, a rain of 1.29 inches fell, making the total 2.83 inches for the month. This is 1.26 inches less than the total for the same period in 1938, and 0.78 inch less than the 29-year average for the month of April. The total precipitation to date for the year is 10.10 inches. This is lower than for the same period in any of the past 10 years, and is 6.76 inches less than the 10-year average.

Temperatures were about normal. The maximum was 86°, the minimum 34°, and the average mean 66°.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (May 13)

Spring seeding of small grains was a week to 10 days later than normal this year owing to cold wet weather. Since May 1, however, the weather has been ideal for field work. Seeding of the spring wheat nursery and field plots was completed on May 3. Seeding of the other small grain crops, oats and barley, and flax has been completed, also. All the crops have emerged with good stands.

Light frosts occurred on May 10 and 11 but do not appear to have damaged any of the crops.

The western and northwestern parts of the State are dry. While there was sufficient moisture to germinate the grain, rains will be necessary in the near future to keep the grains growing.

There was severe winter-killing in the winter wheat nurseries at both University Farm and Waseca. A part of this injury may be due to lack of winter hardiness of the material grown in the nurseries, since most of the new hybrid selections are from backcrosses of winter-spring wheat crosses. Winter wheat in farmers' fields is in good shape, most of the winter injury occurring only in low spots in the fields.

Corn is now being planted in central and southern Minnesota.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (May 10)

Weather conditions during the first 10 days of May have been exceptionally favorable for growth of small grains. Maximum temperatures have been in the low eighties, except for a maximum of 94° on May 10. Minimum temperatures have been between 55° and 67°. One small shower of 0.58 inch is the only precipitation received. One heavy dew following this rain is the only dew providing conditions favorable for rust infection.

Small grains have headed slowly owing to the cool weather. Four to 10 days elapsed between first and full heading. Most small grains, with the exception of spring-sown oats, are headed. Fall-sown barley will be ripening in a few days. All small grains have improved materially since May 1. Spring-sown oats need additional moisture and probably will produce a low yield. An exceptionally good barley crop is in prospect. Fall-sown oats and wheat are still very irregular within fields and from field to field. Some fields will produce good yields.

The writer visited the small grain experiments at College Station, Temple, and Greenville during the past few days. Small grains are the poorest in central Texas that the writer has ever seen. Most fields of oats are so short it is doubtful if they can be cut unless combined. There is very little crown rust in any of the sections of the State visited. A small amount of stem rust of oats was found at Temple and Hillsboro. Leaf rust of wheat has done very little damage this season. Stem rust of wheat has spread very little from early infection centers in this county. There was very little stem rust even at Temple, where the new rust resistant Mediterranean x Hope wheat strains look very promising.

(May 20)

During the past 10 days, precipitation has been recorded on 5 days, totaling 1.12 inches. Heavy dews have occurred on all other days except one. The maximum temperature for the period was 91° and the minimum, 53°. Partly cloudy weather has prevailed most of the time. These conditions have been very favorable for the spread of the cereal rusts. Although crown rust of oats still is not spreading very fast and will do little damage, stem rust of wheat is now spreading fairly rapidly. As wheat is fully headed and much of it well advanced, it seems unlikely that any material damage to the crop may be expected.

All small grains have improved materially during the past 15 days over prospects on May 1. Exceptionally fine yields and quality of barley are promised. Harvest of barley started yesterday. Fall oats are maturing a good crop of grain in spite of the very short straw. Spring oats have been greatly benefited by recent general rains.

A field day held on May 17 was attended by approximately 250 farmers. Owing to general rains the night before the attendance was not as large as expected. Official visitors for field day included Dr. P. C. Mangelsdorf, Texas Experiment Station, College Station, and David Reid, Amarillo, Texas.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (May 17)

Two rains of the first half of May brought wheat on the Station out of a droughty spell during which early seedlings of wheat fired severely but not so much that they are not recovering. The precipitation so far this month has totaled 1.17 inches. More rain is needed.

Fully three-fourths of the varieties in the nursery are fully headed and the awns of Early Blackhull and other early varieties are showing a golden tint.

Leaf rust was first noted on the Station on May 13 but it occurred about two weeks earlier in the vicinity of Mutual, southeast of Woodward.

Loose smut is much more prevalent this year than usual. Infection in the nursery is general though 3 percent would cover the infection in any variety. Nebraska 60 x Early Blackhull hybrids seem especially susceptible.

Fall-sown barley varieties have been fully headed for about one week. awns of most spring barley varieties are emerged at this date.

All spring oat varieties should be first headed by the early part of next week.

Flax varieties are in full bloom and safflower is approximately 30 inches high.

The acreage of rye, barley, and oats on farms in this area is noticeably larger than last year. Wheat on farms is still very irregular and at this date late-emerged fields offer poor prospects of making satisfactory yields.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (May 15)

The winter wheat crop in Kansas has undergone considerable deterioration in the past month. The May 1 estimate on yield was only slightly in excess of 116,000,000 bushels and 2,000,000 bushels below that of April 1. There has been considerable deterioration since May 1, especially in the western half of the State.

Primary infections of leaf rust can be found in winter wheat in nearly all fields in the eastern half of the State, but infections so far are sparse and no secondary infections have appeared. The weather remains cool and dry, conditions that are unfavorable for rust infection and development. No natural infection of stem rust has been reported on wheat in Kansas. Artificial inoculations made on May 5 began fruiting today. The unseasonable weather and absence of dew undoubtedly are holding down all of the cereal rusts. At present this does not look like a rust year in the Plains area.

The writer made a short trip to southern Kansas yesterday. Winter wheat and winter barley were excellent in south-central counties. Winter wheat varieties such as Early Blackhull were in full head, while Tenmarq, Chiefkan, and Blackhull were in the late boot stage. Winter barley was in full head.

In the central part of the State winter wheat is extremely spotted and stands are poor. In parts of Reno, Saline, Dickinson, and Marion counties the prospects for a wheat crop seem very uncertain.

Spring plowing is nearly all done and some corn is beginning to emerge. A rain of about half an inch fell at Manhattan on May 6 but no moisture has been obtained since then. Very light rains fell in south-central and south-western Kansas on May 12, but the moisture was not enough to be of much value to spring grains.

(May 20)

Heavy showers in central and eastern Kansas and a good rain in south-western counties have helped the winter wheat crop, which has been deteriorating since the middle of April. The moisture also is very favorable for the development of rust. So far there is only a light, but rather general, infection of leaf rust in the eastern half of the State, and the occurrence of stem rust has not been reported.

Wheat is fairly well headed in southern counties and many fields look excellent. Loose smut of wheat is even more abundant than it was last year. Apparently the very early varieties such as Early Blackhull are the most heavily infected. It now seems clear that loose smut has steadily increased in Kansas in recent years and now has reached serious proportions. Experimental plantings at Manhattan are all full of loose smut.

Mildew and Septoria also are prevalent in the rust nursery at Manhattan but are not much in evidence elsewhere.

FORT HAYS EXPERIMENT STATION, HAYS (Cereal Agronomy, A. F. Swanson)
(May 16)

The rainfall from July 1, 1938, to May 15 of this year is about 60 percent of normal. It has been exceedingly dry in this territory during the first 15 days of May. As a consequence, wheat on cropped land is in many instances beyond recovery or, at best, could only make a light yield with immediate heavy rains. Wheat on fallowed land could yet make a fair crop with additional heavy rains during the next four weeks. It would require at least a rainfall of 5 or 6 inches by harvest time to bring this about. Light showers are of little avail except to keep the atmosphere cool.

Oats and barley on fallowed land are making good growth. Barley is approaching the heading stage. The oats is showing slight symptoms of the influence of drought. Oats and barley on cropped land are being hurt by the drought.

Plans are under way for beginning the planting of the first "date" of sorghum. The surface soil is so dry that it will be difficult to secure proper stands. Since the season of rather heavy rainfall should be just ahead, it is hoped that additional moisture will come soon so that proper stands of sorghum can be secured.

COLORADO

AGRICULTURAL EXPERIMENT STATION, FORT COLLINS (Wheat Improvement, J. J. Curtis) (May 16)

The dry weather of the latter part of April continued during the first half of May at both Akron and Fort Collins.

Winter wheat at Fort Collins has been making a very satisfactory growth. Prospects for a high yield are good. At Akron, the winter wheat is suffering from drought and unless rain comes soon the yields will be low.

The hybrid corn test was planted at Akron on May 9 and 10. The corn planted on April 20 in the date-of-seeding test has emerged to good stands.

The spring-seeded small grains at Akron emerged to very good stands during the latter part of April but have made very little growth during the first half of May.

Dr. Hurley Fellows was at Akron from May 7 to 13 studying dry-land footrot.

NEBRASKA

AGRICULTURAL EXPERIMENT STATION, LINCOLN (Wheat Improvement, K. S.
Quisenberry) (May 10)

At present the outlook for a good winter wheat crop at Lincoln is far from encouraging. The last half of April was dry and so far in May there has been about a half inch of rain at Lincoln. On several days during the last two weeks strong south winds have dried the surface soil very rapidly. Growth on the varietal plots of winter wheat is becoming very irregular, with soil spots and border effect very much in evidence. In some early seeded plots lack of moisture has nearly killed some of the plants.

The winter wheat nursery is in better shape because it was seeded on fallow, but here also growth is very irregular. Moisture must be received soon if a crop is to be harvested. Some plots of rye were marked first headed on May 8 and 9, which is extremely early for this locality. Early winter wheats are in the boot and will start to head within a week if the weather remains warm. The first leaf rust of wheat was observed today, just a week later than last year.

Spring grains in both nursery and plot tests are making good growth. So far the moisture supply has been sufficient for these crops. The oats and barley varieties in the nursery completely recovered from the freeze injury suffered in April. The constant high winds have caused some injury to the leaves. At this date it would seem that spring grain harvest will be rather late.

Winter wheat looks very well south and east of Lincoln. West, however, the situation is very spotted. Some fields near York and Seward are showing brown spots caused by drought. Reports from the far western counties are still favorable.

(May 20)

The last 10 days have been very bad for winter wheat. During this time day temperatures have been high; there have been drying winds and no moisture. The only moisture received since early in April was approximately a half inch on May 6. Wheat fields in the vicinity of Lincoln show many brown spots and reports indicate that farther west the condition is worse.

The varietal plots of winter wheat at Lincoln are still green but must have moisture soon. Some of the early varieties are starting to head. The nursery, growing on fallow, looks much better than the plots, but the situation is becoming rather critical. Early Blackhull and Nebraska No. 28 headed on May 16, and other varieties are coming rather rapidly. The heading dates are about as early as the ones recorded in 1936 and that year harvest was the earliest ever recorded. Leaf rust has failed to spread very rapidly.

Spring grains are not suffering a great deal as yet but will probably head very short. Atsel barley headed on May 19 and a few other early strains are coming very fast.

A light rain was received this morning and the temperature is lower, so temporarily conditions are better, although heavy rains must be received soon if grain crops are to be saved.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (May 16)

The outlook for crop production in this locality is critical. There has been practically no effective precipitation for about a month and some crops are showing severe drought injury. Russian thistles are showing heavier growth than usual. Hot, drying winds that caused considerable soil blowing have occurred frequently. Small grasshoppers have appeared in many fields in greater concentration than previously observed this early in the season but are not numerous on the experiment station land, where bait was distributed frequently last season.

Stands in the wheat, oats, and barley varietal plots and most of the wheat nursery are excellent and the plants still appear in good condition although beginning to suffer noticeably from drought. The last wheat sown April 27 and 29 has shown poor emergence. Some damage from soil blowing also occurred at the north end of the main nursery until checked by the erection of a snow fence.

The flax regional nursery was sown May 11 and the local 9-row nursery the 12th and 13th. Flax seeding has been difficult on account of frequent high winds and a hard, lumpy condition of the soil surface. A good rain is needed to provide favorable conditions for seeding the flax plots and will soon be required to prevent severe drought injury to crops already in the ground.

The maximum temperature was 95° and the minimum, 29° for the period from May 1 to 15. The precipitation was 0.09 inch.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (May 19)

Rather dry weather prevailed until the middle of May. Showers on the nights of the 16th, 17th, and 18th totaled 0.99 inch, making a total of 1.31 inches for the month to date.

Small grasshoppers have been quite thick for the last 10 days, being especially abundant on grassland and in stubbled-in grain. Poison bait was made available this week and farmers are busy spreading it at present. Some fields are already injured badly by the pests.

Stand notes taken on the winter wheat show a fairly good survival in the nursery. The field plots have a very thin stand, although the percent of survival was fairly good. Experimental plots of spring grain at the Substation have fairly good stands but a few barley varieties are thin.

Varieties of flax, corn, and proso were seeded this week and the corn nursery will be seeded tomorrow if rain does not prevent.

With a continuance of showers, crop prospects should be good except for the grasshoppers. They are reported quite thick in all directions except to the southward in areas near the State line, where early drought last summer caused the hoppers to migrate to better pastures.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (May 18)

The total precipitation since January 1 at Fargo has been 2.43 inches and the deficiency is 3.57 inches. Temperatures in May have tended to be high and many days have been windy, so the moisture situation is becoming critical. The Fargo clay soil is beginning to crack much as it does in the fall. This is unusual so early in the season.

Grasshoppers are hatching in great numbers and unusually early. Damage has already been reported in places.

Grain sown early on cultivated ground still looks very well. Upon returning yesterday from a second planting trip at Langdon, the writer found most wheat fields in good condition.

Durum and common wheat yield experiments sown late in April are in good condition with satisfactory stands both at Langdon and Fargo. Later sown hybrid material is more spotted. Wheat sown under the sprinkler was sprinkled to insure germination. The soil showed an enormous water absorption.

Following a frost at 24° at Fargo, and 19° at Langdon, a severe dust storm on May 9 caused some injury to the Fargo nursery.

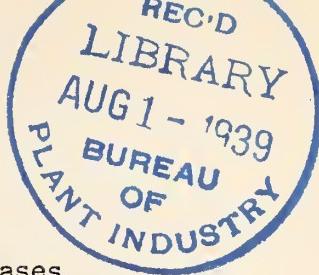
MONTANA

AGRICULTURAL EXPERIMENT STATION, BOZEMAN (Wheat Improvement, R. H. Bamberg) (May 20)

The seeding of spring wheat bunt nurseries at Bozeman was started April 20 and completed the next day. Most of the yield nurseries and field plots were seeded April 25 to 27, three to four weeks earlier than in 1938. Most seedlings emerged to good stands within 10 to 14 days. Temperatures have remained rather low with frost every week in May. The precipitation in April and so far in May is much below normal.

At Moccasin all spring grains were seeded May 1, 2, and 3. The top soil was dry but there was good moisture below 3 inches. Rains totaling 0.89-inch precipitation the next three days after seeding should have assured good germination and emergence.

Winter wheat in the Judith Basin and in the vicinity of Great Falls was in excellent condition the first week in May. There was little winter-killing or damage from blowing.



CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 31

June 10, 1939

No. 8

Personnel (May 26 - June 10) and Field Station (May 16 - 31)

PERSONNEL ITEMS

The following members of the Division field staff were authorized to attend the meeting of the Western Division of the American Society of Agronomy held at Davis and Berkeley, Calif., June 6 to 8: Mr. A. T. Bartel, Tucson, Ariz.; Mr. C. A. Suncson and Dr. R. S. Rosenfels, Davis, Calif.; Mr. L. L. Davis, Biggs, Calif.; Mr. R. W. Woodward, Logan, Utah; Mr. Harland Stevens, Aberdeen, Idaho; and Mr. C. I. Seely, Moscow, Idaho.

Mr. L. W. Kephart spent June 6 in Pennsylvania inspecting weed control experimental plots.

Mr. C. H. Kyle will leave Washington June 14 to spend several weeks at Tifton, Ga., selecting and hand pollinating corn and taking notes on co-operative corn experimental plots. He will also confer with officials of the State agricultural experiment stations in Georgia, Florida, South Carolina, and North Carolina regarding corn experiments.

Dr. M. A. McCall will leave Washington June 12 for Wooster, Ohio, where he will confer with cooperating officials of the Ohio Agricultural Experiment Station regarding the work of the Federal Soft Wheat Laboratory and in the co-operative corn breeding project. He will also inspect certain field work of the Soil Survey in the States of Ohio and Michigan. Dr. McCall expects to attend the sessions of the Corn Belt Section of the American Society of Agronomy to be held at Columbus and Wooster on June 14, 15, and 16.

Mr. Max E. McCluggage was authorized to attend the annual meeting of the Kansas City Board of Trade One-Day Grading School for Millers and Elevator Men at Kansas City, Mo., on June 4. This preceded his attendance of the meeting of the Association of Operative Millers held at Kansas City from June 5 to 9.

Mr. T. R. Stanton returned on May 27 from a short trip into Virginia and the Carolinas in the interest of oat improvement. He reports that hundreds of new selections of winter oats from hybrids involving the crown-rust resistant Bond, Capa, and Victoria varieties were observed in the large breeding nursery maintained by the Coker's Pedigreed Seed Company, Hartsville, S. C. Altogether some 32,000 rows of oats and wheat were being grown, of which 11,450 represented selections of oats being grown in panicle rows. One of the most promising new selections in a large plot for increase of seed is Coker selection 39-2 from a Fulgrain x Victoria cross. This oat is similar to Fulgrain in plant and kernel characters and is showing satisfactory resistance to races 1 and 45 of crown rust. It also is as winter hardy as Fulgrain and is resistant to the red oat smuts, particularly the so-called Fulgrain race. Unfortunately, a very small percentage of the plants in this plot are showing the strong, twisted, and geniculate awn of the Victoria parent. The presence of these strong awns is not at all desirable and may necessitate further re-selection. Coker 39-1, a sister of Coker 39-2, appears to be homozygous for all plant characters and has satisfactory resistance to crown rust and smut. However, this strain lacks vigor, and has a less desirable type of kernel than the Fulgrain parent or Coker 39-2.

Contrary to the belief that winter common oats such as Lee, etc., are fully adapted to the so-called red oat areas, crown-rust resistant selections from a Lee x Victoria cross appear quite promising and will make rather high yields. These selections, however, may be a little late for the Coastal Plain area of the Carolinas.

Dr. George J. Wilds, president and head plant breeder of the Coker's Pedigreed Seed Company, informed the writer that Frondosa wheat is being increased from three rows grown in 1938 and by thin seeding they hope to have sufficient seed for sowing 40 acres in the fall of 1939.

At Statesville, N. C., the best winter-oat nursery yet observed by the writer in North Carolina is being grown under the supervision of Dr. G. K. Middleton. Reselections of Lee and selections from Lee x Victoria and Bond x Victoria crosses appeared to be outstanding. Several excellent fields of Fulgrain oats were seen in the vicinity of Battleboro, N. C., especially on farms of the M. C. Braswell Company.

While in Richmond, Mr. Stanton visited the seed laboratory of the State Department of Agriculture in the interest of oat varietal identification from seed samples. T. W. Wood & Sons, seedsmen, Richmond, are recommending Columbia as the best variety of oats now available for spring seeding in much of their trade territory. For fall seeding they are handling Fulgrain and Lee oats primarily. The Southern States Cooperative, which handles large quantities of seed oats of varieties such as Fulghum, Fulgrain, Lee, and Columbia, stated that they are refunding the money to farmers who bought Columbia for Winter Turf oats last fall. There apparently was considerable confusion of these varieties because of similarity of grain characters until cleared up by the Virginia Seed Laboratory of the State Department of Agriculture and the Division of Cereal Crops and Diseases.

Dr. G. A. Wiebe spent June 1 and 2 at the Chicago headquarters of the Bureau of Agricultural Economics in conference with Mr. B. W. Whitlock on the malting barley grades for the Pacific Coast.

FISCAL NOTE

Several of the government vouchers have been revised as to form. The stock of old forms may be used until exhausted, but please see that the new form carbon copy is not used with the old form original, or vice versa.

H. S. Smith,
Junior Administrative Assistant.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. Mitchell Jenkins)
(June 2)

Temperatures were about normal in May and nearly the same as in May 1938. The maximum was 88°, the minimum 55°, and the average mean 75°.

The total precipitation of 3.38 inches is 1.55 inches less than the 29-year average for May.

Rain was recorded on 10 days. It was very beneficial for rice but interfered greatly with the cultivation of nonirrigated crops, especially cotton.

Work on the Station has progressed nicely. Rice plots are in the main up to good stands, and most of them have been irrigated. It was necessary to irrigate rice plots that were sown in May in order to cause complete germination. Light rains in the early half of the month did not sufficiently wet the soil crust formed by each rain to permit the seedlings to emerge.

In early May, soon after germination, there was a considerable loss of cotton seedlings from some form of disease. For a while, it was feared that reseeding would be necessary. The disease disappeared, however, and enough plants were left for a good stand in nearly all plots.

Frequent rains the latter half of May prevented the proper cultivation of the cotton plots. Weeds were kept sufficiently checked, however, to permit satisfactory cultivation in early June if the weather permits.

E. Baron von Spiegel, German Consul General at New Orleans, was a Station visitor May 23.

Fifty-four seventh-grade graduates from the Iota, La., school visited the Station May 31.

ARKANSAS

RICE BRANCH STATION, STUTTGART (Rice and Oat Production and Improvement, C. R. Adair) (May 31)

In general, conditions for rice seeding have not been favorable in the State this year. The rice sown the latter part of April emerged to good stands. Starting about May 1 local showers occurred in some sections while in others the land was too dry for germination. There was a small area about 25 miles north of Stuttgart in which the land was so wet that it was not possible to seed the crop until after the middle of May. Close to Stuttgart and the Experiment Station the soil was dry during the first part of this month so rice sown about the first of the month came up very unevenly. There was a rather general rain on May 25, which furnished sufficient moisture for germination and emergence. The uneven germination and emergence is very bad as there are plots on the Station on which some plants are ready to be watered while others are just emerging. The stands of rice seem to be better and more uniform in the southern part of the county.

The oat crop in this territory is the best since 1931. Crown rust was noted this year but it did not develop about the usual time. It appears that this was due partly to climatic conditions and partly to lack of inoculum. There was only one rain from April 20 until May 6. Then there were three days when it showered a little each day followed by a week of dry weather. It has rained 11 of the 15 days from May 17 to date. The susceptible varieties are all moderately infected at this time, but the crop is so far advanced that there will be little or no loss from rust.

Wind and rain has caused considerable lodging, especially in the southern part of the county. However, even in the worst fields it will be possible to save more oats than are usually made.

The total precipitation for May was 3.05 inches or 2.25 inches below normal; the highest temperature was 92° on the 28th, the lowest 44° on the 4th, and the mean daily temperature was 69.8°, or 0.1° below normal.

MISSOURI

AGRICULTURAL EXPERIMENT STATION, COLUMBIA (Corn Breeding, G. F. Sprague)
[June 8]

The month of May was characterized by dry hot weather. The maximum temperature was 97°, recorded on May 24. The minimum temperature was 39° on May 2 and 3. The rainfall for the month totaled 1.03 inches, the distribution being as follows: May 5, 0.54; May 25, 0.22; May 26, 0.20; and May 27, 0.7 inch. These showers were only of temporary benefit.

Irrigation of one of the crossing blocks was begun May 22. Because of the dry weather and its consequent heavy demands on the water supply, pressures have been so low that the irrigation equipment has not operated properly.

For the most part stands of corn have been good for all plantings except on spring-plowed ground. On this type of preparation, the soil is thoroughly dry to the depth of the furrow slice. The scattered showers were sufficient to bring about germination in some cases but it is doubtful whether such stands can become established. In corn fields, below the furrow slice, subsoil moisture is still adequate.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (June 3)

Rains during the latter part of the month have improved the crop outlook in Minnesota. Many parts of the State, particularly in the western and northwestern sections, were very dry prior to the rains beginning about May 22. Since this date moisture has fallen in the form of local showers in most parts of the State.

Winter wheat is beginning to head. Spring wheat has made good growth even though it was dry during the earlier part of the month.

Leaf rust was found in the winter wheat nursery at University Farm from natural infection on May 23. Stem rust from artificial inoculation was found May 29.

The total rainfall recorded at University Farm in May was 3.02 inches with 1.20 inches occurring prior to May 4 and 1.28 after May 24. The maximum temperature was 95° on May 30.

Corn has emerged with good stands.

Miss Mary L. Martini visited the Station on May 25 and 26.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins)
(June 1).

Weather conditions during the entire month of May have been very favorable for the maturing of small grain. The maximum temperature was 98° and the minimum, 51°. The precipitation for the month was 2.14 inches, or 2.29 inches below normal. A total of 23 dews or small showers provided favorable conditions for stem rust of wheat during the last part of the month. Considerable stem rust inoculum has been built up but very little damage will result in this area. Stem rust of oats appeared late in the month but has not spread very fast.

Harvest of fall-sown oats and barley is completed and wheat harvest is under way. The majority of the grain in this area is already in the shock. A few fields of barley have been combined and combining of wheat and oats will start in a few days.

The writer visited the experimental nursery at Chillicothe last week. Little rust is present on wheat in that area and a good crop is in prospect on the Station. Wheat and oats on farms are very spotted, some being seriously damaged by dry weather.

Visitors during May included Dr. S. C. Salmon, Dr. K. S. Quisenberry, Mr. E. S. McFadden, and Mr. C. O. Johnston, as well as many farmers.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (June 2)

Sorghum and broomcorn seed is being prepared for June planting. The first "date" planting of a cooperative hegari test was made May 1 and emerged to good stands in a week. The first "date" of broomcorn varieties was planted June 1.

Soil moisture conditions for sorghums are only fair but can vary rapidly as the season advances.

Judging from seed sales, more sorghums will be planted in this vicinity than in preceding years.

The precipitation for May was 1.66 inches. The maximum temperature was 102° on the 22d, and the minimum, 42° on the 13th.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (June 2)

Abundant rainfall during the last half of May has vastly improved the crop prospects for this locality. Some rain was recorded on 11 of the 16 days but the first effective rainfall occurred on the 23d when one inch was recorded. Over half an inch also occurred on the 25th. The total rainfall for the period was 1.84 inches.

Stands in the wheat varietal plots and regional and intrastate nurseries are practically complete and uniform. Some of the wheat sown during the last week in April that failed to emerge promptly has emerged during the past week so that stands are now practically complete.

Stands of flax in plots and nursery rows are better than for some years past.

Small grasshoppers have appeared in great numbers but it is hoped that the rain and distribution of poisoned bait will be effective in keeping them in check. Some cutworms have been observed but they have done no serious damage so far.

The maximum temperature was 99° on the 30th and the minimum, 22° on the 22d. The June rainfall received a good start, 1.23 inches having been recorded for the first day. Rain is still falling steadily.

(June 3)

Pustules of leaf rust were noted this morning on wheat in the nursery border rows. All were very small and bright orange and evidently had just broken out. No stem rust was found after a careful search on susceptible varieties.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (June 1)

Since the middle of May moisture conditions have been very good at this Station with frequent rains and rather cool weather. The total precipitation recorded for May was 3.22 inches, and that for the year to the end of May was 6.08 inches, both being approximately an inch above normal. In addition to the rain recorded for May there was a shower of 0.35 inch yesterday to be recorded as of June 1. The seeding of cereal varieties is completed and all crops have emerged except sorghum varieties, which are germinating. One seeding remains to be done in the date-of-seeding experiment with Bison flax.

Winter rye varieties are heading and winter wheat will be heading in a few days. Other cereal crops are growing rapidly and in good condition.

Grasshoppers which have been very thick in places have been thinned out considerably by repeated poisoning. Considerable damage from them is reported in some localities. More are expected to hatch out with the return of warmer weather.

There have been no killing frosts since early in May. A maximum temperature of around 90° was reached on a few days last week. It is now cool and cloudy with a good prospect for more rain.

Stand notes are being taken and the nursery is being cultivated and hoed.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (June 1)

Considering the time of year, crop prospects at Fargo are very poor. The precipitation since January 1 has been but 2.64 inches. The normal is 7.44 inches. Furthermore, of this small amount, only 0.48 inch fell in May. The mean May temperature was 62.2°, almost 8° above normal. The last three days of the month were especially adverse with temperatures above 90° (Memorial Day 101°) and a total wind mileage of 761 miles for the three days.

Langdon has had one good shower, 0.75 inch, which should bring up late-sown hybrid material. The early nurseries at both Fargo and Langdon are holding their own with fairly satisfactory stands.

Many places in North Dakota have received good rains which will afford temporary relief, but much more precipitation is needed.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward)
(June 1)

Crops have grown unusually well during May. Although the month started out rather hot and dry, timely rains have kept grains in good growing condition. Stands of winter wheat are generally spotted and thin in Cache Valley. Much better stands can be found in most of Box Elder and Juab Counties. Most of the winter wheat is either heading or in the boot stage at this time. Yields promise to be variable and should range from 12 to 30 bushels per acre. No indication of any disease was noted in the winter wheat, although it is still too early to predict the amount of smut that may be present.

The spring-seeded nursery and plots are in excellent condition for this time of year. Most of the barley varieties and strains have already headed. Spring wheat is commencing to head but the oats are still in the boot stage. Most of the nursery was irrigated just a day before a heavy rain. So far there has been very little lodging. During the month a total of 2.38 inches of rain has fallen in three major storms. Early sown spring grain can possibly be matured without irrigation. Moisture conditions have been ideal in spite of considerable deficiency of snow.

The month of May has been relatively warm, the maximum temperatures on several days being 85° to 90°. There were no serious frosts.

CALIFORNIA

UNIVERSITY FARM, DAVIS (Cereal Agronomy, C. A. Suneson) (May 31)

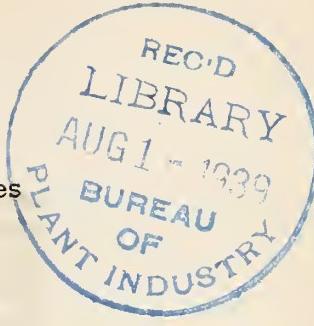
Harvesting of commercial fields in this section began 10 days ago. This is about two weeks earlier than usual. Unusually cool weather during the entire month of May has helped cereals materially. Estimates of drought injury have been modified as a result, and it now seems likely, in view of a 15 percent increase in barley acreage in the State, that the Sacramento Valley will produce a half normal crop and the San Joaquin Valley a nearly normal one. Uniformly plump lots of barley will not be very common, however, for on most Sacramento Valley dry lands seasonal rainfall was inadequate to meet moisture stored by fallowing in all parts of fields.

Most of our experimental grain was irrigated. Mildew injured barley severely up until heading time and then subsided. Mildew on oats persisted until maturity and contributed to the breaking over of many varieties shortly before maturity. Stem rust of wheat overwintered here, but has made little progress until recently. It will do considerable damage to late varieties of wheat here and over most of the State. Leaf rust also overwintered but it has not taken hold anywhere. Stripe rust is more prevalent than usual but is not doing much damage. In the hessian fly area, where breeding and genetic studies are being conducted in cooperation with Federal entomologists, susceptible checks are averaging only 60 percent infection--the lightest ever experienced.

About 250 visitors attended field day here on May 19. Recent official station visitors include Dr. Roderick Sprague and Dr. H. V. Harlan.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

June 25, 1939

No. 9

Personnel (June 11 - 25) and Field Station (June 1 - 15)

PERSONNEL ITEMS

The following were authorized to attend the meetings of the Corn Belt Section of the American Society of Agronomy held at Columbus and Wooster, Ohio, June 14, 15, and 16: Dr. E. G. Bayfield, Dr. B. B. Bayles, Dr. M. A. McCall, Dr. J. D. Sayre, and Mr. G. H. Stringfield.

Dr. E. G. Bayfield and Mr. C. E. Bode were authorized to attend the June meeting of the Cincinnati Section of the American Association of Cereal Chemists held at Cincinnati, Ohio, on June 24.

Mr. E. Brown will go to Niagara Falls, Canada, on June 27 to confer with research workers regarding plans for the International Seed Testing Congress to be held in the United States in 1940.

Mr. J. Allen Clark left Washington June 16 on his annual trip in the hard red spring wheat area. He will inspect and take notes on cooperative wheat experiments in Illinois, Minnesota, Iowa, Nebraska, Colorado, Wyoming, South Dakota, and North Dakota.

Mr. F. A. Coffman left Washington June 17 on his annual trip in the oat-producing regions of the West. He will make stops in Ohio, Indiana, Illinois, Missouri, Kansas, Nebraska, and Colorado to inspect cooperative experiments, record data, and obtain plant materials and seed for future study and tests. He also will confer with officials of State agricultural experiment stations and others regarding plans for future cooperative experiments with oats.

Dr. E. T. Edwards, Plant Pathologist of the Department of Agriculture, Sydney, N. S. W., Australia, was a visitor in the Division from June 22 to 24.

Dr. Charlotte Elliott spent June 15 and 16 at Hempstead, Long Island, taking records on sweet corn plots and collecting insect carriers of bacterial wilt. On June 21 she inspected corn plots and collected insect vectors at Arendtsville, Pa.

Dr. Merle T. Jenkins left Washington June 19 on a trip through the corn-producing areas of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, and Tennessee. He will confer with officials of State agricultural experiment stations regarding the corn improvement programs.

Dr. H. A. Rodenhiser left Washington June 18 to travel in Kansas, Wyoming, Utah, Idaho, and Oregon in connection with cooperative smut experiments.

Mr. T. R. Stanton left Washington on June 19 to make stops in Indiana, Illinois, Iowa, Nebraska, Kansas, Missouri, and Wisconsin for the purpose of inspecting cooperative experiments with oats and conferring with officials of State agricultural experiment stations regarding plans for future work. He will also collect plant and disease specimens for future study.

Dr. G. A. Wiebe left Washington June 19 on a tour of the barley-producing area to take notes on cooperative barley experiments and confer with personnel of the Division and officials of the State agricultural experiment stations regarding cooperative barley research. His itinerary will include stops in Maryland, Pennsylvania, Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, Kansas, Nebraska, South Dakota, North Dakota, Wyoming, Colorado, Idaho, Iowa, and Missouri.

ERRATUM

The report from G. F. Sprague listed under Columbia, Mo., in the Cereal Courier of June 10, 1939, should have been listed under Ames, Iowa.

RECENT PUBLICATIONS

J. Mitchell Jenkins. Biennial Report of the Rice Experiment Station, Crowley, Louisiana, 1937-1938, 32 pp., 3 figs. [1939] (Cooperative investigations between the Division of Cereal Crops and Diseases and the Louisiana Agricultural Experiment Station.)

N. E. Jodon. Progress in Improving Rice Varieties. In Bien. Rept. Rice Expt. Sta., Crowley, La., 1937-1938, pp. 15-17. [1939] (Cooperative investigations of the Division of Cereal Crops and Diseases and the Louisiana Agricultural Experiment Station.)

E. S. McFadden. Brown Necrosis, a Discoloration Associated with Rust Infection in Certain Rust-Resistant Wheats. Jour. Agr. Research 58(11): 805-819, figs. 1-4. June 1, 1939. (G-1129) (Cooperative investigations of the Division of Cereal Crops and Diseases and the Texas Agricultural Experiment Station.)

S. C. Salmon and J. W. Taylor. Growing Wheat in the Eastern United States. U. S. Dept. Agr. Farmers' Bull. 1817, 59 pp., 52 figs. May 1939.

W. J. Sando. Effect of Mutilation of Wheat Seeds on Growth and Productivity. Jour. Amer. Soc. Agron. 31(6): 558-565, figs. 1-2. June 1939.

J. B. Sieglinger and J. H. Martin. Tillering Ability of Sorghum Varieties. Jour. Amer. Soc. Agron. 31(6): 475-488, figs. 1-2. June 1939.

G. F. Sprague. Heritable Characters in Maize. 50--Vestigial Glume. Jour. Heredity 30(4): 143-145, figs. 6-8. April 1939. (Contribution of the Missouri Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

GENERAL ACCOUNTING OFFICE

SYNOPSIS OF DECISION

A-98035.(S) Federal Prison-Made Goods--Purchases of Similar Items Commercially Where Lower in Price.

The fact that an article can be purchased commercially at a price lower than that at which obtainable from Federal Prison Industries, Inc., is no justification for commercial purchase.

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF DIRECTOR OF PERSONNEL
Washington

June 7, 1939.

To: All Chiefs of Bureaus and Offices
All Bureau Safety Representatives

ROCKY MOUNTAIN SPOTTED FEVER

The death, by Rocky Mountain Spotted Fever, of Dr. Dana Manners, a Washington pharmacologist, marked the beginning of the season in which this ailment is prevalent. The next three months are the ones in which everyone, particularly those who work or take their recreation out of doors, should exercise great care to prevent receiving the infection through the bites of infected ticks or through inoculation of small open wounds with the blood of ticks.

Effective precautions can be taken to prevent infection as eight hours attachment and feeding are necessary before the spotted fever germ can be communicated. A simple method of prevention is to inspect the body and clothing twice each day whenever there is a question of exposure to ticks. Removing the ticks from the body with tweezers will prevent infection through small skin abrasions and cuts on the fingers. Iodine should be used to paint the spot where the tick was attached. Tweezers should also be used in removing the tick from domestic animals, pets, etc. The ticks should be dropped into a can of kerosene or carbolic acid solution.

Dr. Manners was the third case reported for 1939 and the first death. There were 8 cases in 1938 with 3 deaths resulting. In certain mountain areas in the western States, this ailment is more prevalent and the mortality rate much higher than in Washington.

All field forces should be warned of the dangers of tick bites and required to follow the simple preventive measures. The U. S. Public Health Service has developed a preventive inoculation for the disease. Workers in areas where it is more prevalent should be governed by the advice of the U. S. Public Health Service physicians.

(Signed) P. L. Gladman

Acting Director.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

RICE BRANCH STATION, STUTTGART (Rice and Oat Production and Improvement, C. R. Adair) (June 21)

The yields of winter oats were better this year than in any year since 1931. This is true not only on Station plots but on farm fields in this region.

The yields for 21 varieties grown in triplicated 1/49th-acre plots are given in the accompanying table. Appler (C.I. 1815), with an average yield of 105.3 bushels per acre, had the highest yield. The other leading varieties were Fulgrain No. 2, Nortex, Hasting's Hundred Bushel, and California Red Rustproof with average yields of 101.5, 101.0, 100.8, and 99.2 bushels per acre, respectively.

Yield of winter oat varieties grown in triplicated field plots at the Rice Branch Experiment Station, Stuttgart, Ark., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)
Appler	1815	105.3
Fulgrain No. 2	----	101.5
Nortex	2382	101.0
Hasting's Hundred Bushel	2462	100.8
California Red Rustproof	-----	99.2
Ferguson No. 922	2150	98.9 1/
Red Rustproof	512	97.5
Fulgrain	3253	97.0
Red Rustproof (Texas 1415-9)	518-3	93.9
Louisiana Red Rustproof	-----	93.9
Fulghum (Winter Type)	2500	93.1
Ferguson No. 71	844	90.9
Fulghum (Winter Type)	2499	90.6
Alber	2766	89.8
Coker 33-50	3167	89.8
Kocourek	-----	89.6
Lec	2042	88.8
Fulghum	708	86.8
Norton Forage	-----	86.5
Custis	2041	85.3
Coker Norton	2909	79.7
Winter Turf No. 541-4	-----	68.0

1/ Average of 15 plots.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (June 17)

Crop conditions improved very materially in Minnesota during the first half of June. Rains were general over the State. It rained 8 days at University Farm during this period and a total rainfall of 2.74 inches was recorded.

Winter wheat has headed and is in excellent shape. The straw is somewhat shorter than in 1938. Only traces of leaf rust on winter wheat have been reported so far.

The spring grains are beginning to head at University Farm. In the Red River Valley, wheat is in all stages of growth from emergence to heading. Mr. Dunham, agronomist at the Northwest Experiment Station at Crookston, states that the Valley will not have more than half a normal crop of small grains. Grasshoppers are a serious menace in that section of the State.

Corn is in excellent condition.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (June 16)

Sorghum and broomcorn planting is well under way. Wheat harvest is also in full swing in this district.

The first date-variety seeding of broomcorn (June 1) emerged to good stands. The sorghum varietal experiment seeded June 8 came up to spotted stands,--the result of a dashing shower of 0.81 inch the night of the 11th.

The maximum temperature for the first half of June was 103° on the 15th, and the minimum 53° on the 3d. A precipitation of 1.99 inches was recorded in three rains.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (June 10)

Harvest of winter wheat has started in south-central Kansas in fields of Early Blackhull. Other varieties are beginning to ripen and harvesting soon will be in full swing in the southern half of the State. The first grain to reach the market has been high in test weight and moisture as well as of excellent dark, hard appearance. It now seems that much of this year's crop will be high in test weight per bushel.

Although the official May 1 estimate of yield has not yet been released it now seems that the eastern half of Kansas will produce a very excellent wheat crop. Conditions have been favorable for the production of grain of excellent quality and only adverse weather during harvest can cause much damage now.

This definitely is not a "rust year" in Kansas. During a recent trip through south-central Kansas, north-central Oklahoma, and southeastern Kansas, the writer found only traces of stem rust. Leaf rust was heavy at Stillwater, Okla., and in southeastern Kansas, but it reached its maximum so late in the season that it caused slight damage. Leaf rust now is heavy on late wheats at Manhattan, but early varieties are beginning to ripen and farm wheat is so far advanced that little damage will result.

The winter wheat plots at the Agronomy farm were nearly destroyed by a hail storm the evening of June 7. The Agronomy nursery and the rust nursery also were severely injured. The hail was accompanied by strong wind and driving rain which caused severe lodging.

On recent trips through Kansas the writer has observed an unusually high percentage of loose smut in winter wheat. The varieties Clarkan and Chieftan seem to be most heavily infected but varieties of the Turkey type also are heavily smutted. Counts in one field of Clarkan at Columbus, Kans., revealed 32 percent infection. Many other fields in eastern Kansas had 10 to 20 percent smutted spikes.

Speckled glume blotch (*Septoria tritici*) is unusually severe on wheat in southeastern Kansas. Kawvale appeared to be very susceptible, all leaves being heavily infected and drying prematurely. Most of the soft red winter varieties also were heavily infected while the leaves of hard red winters showed fewer brown lesions.

Rust notes now are being taken on winter wheats in the rust nursery. Early varieties and hybrid lines are beginning to ripen and harvest soon will be under way.

FORT HAYS EXPERIMENT STATION, HAYS (Cereal Agronomy, A. F. Swanson)
(June 15)

Harvest on the Cereal Project is well under way and except for some late material will be almost completed by June 17. Threshing will follow immediately. Yields for all small grain will be mostly zero on cropped land. On fallow the yields of wheat will run from 15 to 25 bushels, depending on plot location, treatment, and variety. Quality will be good for nearly all wheat grown on fallowed land. The dryness of the season has caused full color development of straw and glumes and mixtures are very easily identified. Varieties have reacted strongly to drought resistance, indicating good possibilities of selecting outstanding types.

One of the longest periods of drought on record was broken on June 13, when 1.52 inches of rain fell; this is the heaviest rainfall since Sept. 14 and 15, when 1.5 inches fell. All wheat on the Cereal Project as well as in the vicinity of the Station was grown without an effective rainfall from the time of sowing until ripening. The highest rainfall between the above mentioned precipitation was 0.75 inch.

COLORADO

AGRICULTURAL EXPERIMENT STATION, FORT COLLINS (Wheat Improvement,
J. J. Curtis) [June 19]

The precipitation for the first half of June was only 0.28 inch. This dry weather has hurt the wheat on dry land. The winter wheat on the station looks well. It is, however, about a week earlier than normal and harvest should begin in the early part of July. Good yields appear probable. Many of the weaker-strawed varieties are lodging.

[June 12]

The rainfall in May at Akron was low as compared to the 30-year average of 2.85 inches. Only 2.11 inches was recorded in May and most of this during the last two weeks. Nine-tenths of an inch fell on May 25.

Winter wheat suffered from drought but was able to resume growth after the rain. However, wheat on cornland is extremely short and will be difficult to harvest unless the straw lengthens. Because of low precipitation during the fall, nearly all winter wheat in the nursery plots showed spring emergence varying from 5 to 100 percent. Spring grains were also affected by drought but no dead plants were found and stands were not noticeably changed.

The dry-land hybrid corn experiment planted May 9 and 10 emerged to good stands on May 22. The May 20 planting in the date-of-seeding corn experiment was also planted.

(June 16)

The precipitation at Akron during the first half of June was below normal, amounting to only 0.33 inch, as compared to 0.89 for the same period in 1938, and 1.18 inches in 1937. The average rainfall for the month of June for the past 31 years is 2.36 inches.

The sorghum nursery was planted June 5 and emerged to good stands June 12. The forage sorghum varieties were planted June 7, and the grain sorghums June 8. An experiment to determine the effect of different treatments upon sorghum seed was planted for the first time this year. It was planted June 5 and emerged quite uniformly over all of the plots on June 13.

The date-of-seeding millet test for the June 15 planting date was sown and also the date-of-seeding beans test.

The land to be used for planting the millet varieties was prepared and the seed to be used was hand picked in order to eliminate, as far as possible, mixtures in the field plots.

Grasshoppers seemed to be getting more numerous in spite of the fact that 1,200 pounds of grasshopper poison was spread in various places over the Station.

Considerable time was spent in hoeing weeds, which were numerous in the nurseries, in the alleys between field plots, and in the rate-and-date-of-seeding winter wheat experiment.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (June 16)

Moisture conditions during the first half of June have been favorable for crop development. The effects of the drought during May are evident, however, in the scant stooling, shortness, and early heading of cereal crops.

Flax is developing well but the plots are very weedy because the drought during most of May did not permit germination and early destruction of weeds by tillage before seeding. In general, flax stands are good although some varieties in the regional nursery showed poor germination. Occasional cutworms and some heat canker have also caused some reduction in stands.

Grasshoppers are not much in evidence in the Station plots. The frequent rains and spreading of poisoned bait apparently have been effective in keeping the hoppers in check.

Leaf rust has shown very little development on wheat, although occasional pustules may be readily found on some susceptible varieties. No stem rust has been found so far.

The maximum temperature was 72° and the minimum, 37°. The precipitation was 2.69 inches.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith)
(June 15)

June weather during the first half of the month has been cool, cloudy, and wet. Rain was recorded on 8 days and the remaining days were mostly cool and cloudy. The precipitation so far in June has been 2.63 inches and that for 1939 to the present time, 8.71 inches. The latter is about 2 inches above normal. The maximum temperature this month was 80° on the 5th and the minimum, 38° on several nights.

The cool, wet weather has retarded the development and activity of grasshoppers and probably has helped in eliminating some of the pests. No serious damage has yet occurred at the Substation from the hoppers. Frequent poisoning has reduced the numbers a great deal.

Wheat, rye, oats, and barley are in excellent condition. Corn, sorghum, and proso show the need of sunshine and warmer weather. Rye is headed and winter wheat varieties are heading. Early varieties of spring wheat, oats, and barley are about to begin heading.

The frequent showers have interfered with cultivating and hoeing weeds, which have made rapid growth. The hoeing of the spring nursery will be finished today and the vigorous stooling and rank growth of grain leaves should enable the grain to shade the ground and hold the weeds in check, henceforth.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (June 16)

The crop outlook at Fargo has improved materially since June 1. In the past 15 days 3.73 inches of precipitation have been recorded, or more than the 1939 total from January 1 to May 31 (2.89 inches). This moisture has all fallen quietly so that crops will derive a maximum of benefit. Many areas, of course, showed such spotted emergence that a complete come-back is not possible. Other areas were injured by drought after having emerged.

Reward wheat is heading in the Fargo field plots. If rains continue, this may be a season favoring the later varieties.

Grasshoppers are very numerous most all over the State, though less active in the cool weather prevailing since June 1.

Leaf rust was first found June 13. No stem rust has yet been observed.

OREGON

SHERMAN BRANCH EXPERIMENT STATION, MORO (Cereal Agronomy, M. M. Oveson)
[June 15]

The winter wheat and spring barleys on the Station are beginning to ripen with prospects for a fair crop. Rex M (C.I. 11689), Federation (C.I. 4734), and Kanred x Hard Federation (C.I. 10092), all early maturing wheats, are among the more promising varieties in the varietal trial this year.

Continuous dry weather with but 0.47 inch of rain between March 15 and June 15 has resulted in much crop injury throughout Sherman County. Cool weather for the past month with prevailing winds from the west, has helped the crops considerably. The maximum temperature for the past 30 days was 84°, many days ranging in the sixties and low seventies.

Soil moisture tests made on the tillage plots at the Station that are cropped to winter wheat showed that the moisture averaged 6.7 percent for a 6-foot depth on May 3, 6.2 percent on May 12, 6.0 percent on May 22, and 5.5 percent on May 31. With 5.0 to 5.5 percent moisture as the wilting point for our soils there remains very little moisture for winter wheat to mature its crop on.

Mr. D. E. Stephens, former Superintendent of the Station, but now Coordinator with the Bureau of Plant Industry and Soil Conservation Service, spent a few days with us the first of the month.

AGRICULTURAL EXPERIMENT STATION, CORVALLIS (Foot Rots of Wheat,
Roderick Sprague) (June 13)

The nine weeks drought became history in late May in time to save the grain in the Willamette Valley. Spring wheat is said to be too late to promise any but a light crop. Winter grain is more vigorous; in fact, in spite of the desert-like climate of March to mid-late May the Valley has never appeared more verdant.

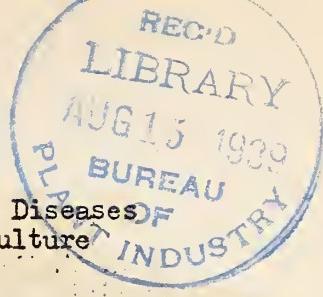
According to the cooperator (Charles Johnson) on High Prairie the grain in the plots looks fair but the crop on the prairie will be light and footrot also light. Olympia barley is showing promise.

A Rhizoctonia + Fusarium purple patch of spring barley has appeared following the dry seeding and the wet spell at time of emergence. It is confined to poor soils deficient in nitrogen and phosphorous. It has caused worry among growers along the west side of the Valley from near Hillsboro south into Lane County.

In a trip into northern California with Messrs. Suneson, Briggs, Kendrick, and Oswald, some dry-land footrot was found, and traces of take-all and much drought were noted in wheat and barley.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

July 10, 1939

No. 10

Personnel (June 26 - July 10) and Field Station (June 16 - 30)

PERSONNEL ITEMS

Dr. B. B. Bayles returned to Washington on July 2 from the western trip begun May 31 and left on July 5 for State College, Pa., and Ithaca, N. Y., to inspect cereal experiments, especially those with wheat, to study varieties and hybrids in breeding nurseries, and to take notes on smut experiments. Upon his return on July 8 he reports that yields of winter wheat throughout Pennsylvania and New York will be good, but spring grains, in general, are showing the effects of the May drought and yields probably will be light.

Mr. A. C. Dillman left Washington July 5 on a field trip in the interests of flaxseed investigations, making stops in Oklahoma, Kansas, Nebraska, Iowa, Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Idaho, Washington, Oregon, and Wyoming. Mr. Dillman will inspect cooperative experiments with flax and describe and classify varieties. He will also confer with officials of State agricultural experiment stations and others in regard to cooperative experiments and new research problems with flax.

Dr. Charlotte Elliott spent three days beginning July 5 taking notes on corn plots and collecting insect vectors at Geneva, N. Y., and Mineola, L. I., in connection with her studies on bacterial diseases of corn.

Dr. H. B. Humphrey left Washington on July 9 for Independence and Blacksburg, Va., where he will read uniform rust nurseries. He will return July 13.

Dr. S. C. Salmon returned to Washington June 29 from a short trip to Wooster, Ohio, where he consulted officials of the Ohio Agricultural Experiment Station regarding the work of the Federal Soft Wheat Quality Laboratory.

Dr. V. F. Tapke left Washington on July 5 for Ithaca, N. Y., where he will spend some time in taking notes on cooperative cereal smut experiments.

RECENT PUBLICATIONS

C. O. Johnston and C. L. Lefebvre. A Chlorotic Mottling of Wheat Leaves Caused by Infections of Bunt *Tilletia laevis*. *Phytopathology* 29(5): 456-458, 1 fig. May 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Max E. McCluggage. Determination of Moisture Requirements for Tempering Wheat for Experimental Milling. *Bull. Assoc. Oper. Millers*: 962-963. June 1939. (Contribution No. 61 from the Department of Milling Industry, Kansas Agricultural Experiment Station, in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, and the State agricultural experiment stations of the hard winter wheat region.)

R. W. Woodward, D. C. Tingey, and R. J. Evans. Tests of Corn Varieties and Hybrids in Utah. Utah Agr. Expt. Sta. Bull. 287, 32 pp. May 1939. (Contribution from the Department of Agronomy and Soils, Utah Agricultural Experiment Station, in cooperation with the Division of Cereal Crops and Diseases.)

SOME CRITERIA OF A GOOD MANUSCRIPT

The editorial staff of the American Journal of Botany, when submitting a manuscript to a reviewer for an opinion as to its value and suitability for publication in the Journal, sends along the 14 questions listed below. It is suggested that writers in the Division of Cereal Crops and Diseases might well ask themselves each of these questions before submitting their manuscripts in final form.

- (1) Would you grade the paper A, B, C, D, or E, on the basis of its relative merit as a scientific contribution--if C represents the average rank of papers in recent volumes of the Journal?
 - (2) Has the material been published previously?
 - (3) Has the work been carried far enough to warrant publication?
 - (4) Is there some other journal for which the paper would be more suitable?
 - (5) Are the conclusions logical and are they based on accurate and sufficient data?
 - (6) Is the arrangement logical? Suggest improvements.
 - (7) Which, if any, of the main ideas are not developed with sufficient emphasis?
 - (8) What parts should be condensed or omitted? (Economy in printing demands brevity--consistent with clear and effective presentation.) Is there unnecessary duplication of data in tables and graphs?
 - (9) What errors have you found in the paper?
 - (10) Where is there lack of clearness?
 - (11) Where does the literary form need to be improved?
 - (12) Has the manuscript been prepared so that it conforms to the best practice illustrated by current issues of the Journal?
 - (13) What improvements, if any, do you regard as necessary in the illustrations? Are they grouped for economical reproduction?
 - (14) Which, if any, of the illustrations should be omitted?
-

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

IOWA

AGRICULTURAL EXPERIMENT STATION, AMES (Corn Breeding, G. F. Sprague)
[July 5]

In contrast to May, which was hot and quite dry, June has been relatively cool and wet. The maximum temperature for the month was 92° on June 1 before the drought was broken. Temperatures of 90° or over were recorded on only 4 days during the month. The minimum temperature was 51° on the 14th.

Measurable precipitation was recorded on 14 days, the total precipitation for the month being 5.57 inches.

Corn has made very rapid growth. Early material is tasseling and shoot bagging has been in progress for three or four days. This is one of the earliest seasons for many years. Small grains have been ripening fast; most of the winter wheat is in the shock.

For the past two weeks the Station has been conducting tours for farmers. There has been a large attendance, considering the unsettled weather. Recent Station visitors were Messrs. G. A. Wiebe, J. Allen Clark, and T. R. Stanton.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (July 5)

Weather conditions in June were favorable for the growth of all crops. At University Farm, there has been an excess of moisture, with a total precipitation of 8.75 inches as compared with a normal rainfall of 4.22 inches. Leaf and stem rust are developing rapidly on susceptible varieties of wheat in the nurseries and plots.

Leaf rust is prevalent over the State. Stem rust was found as far north as Crookston on June 26. Temperatures for the month have been about normal. There is excess moisture in most of the State.

Early varieties of oats and barley are being harvested at Waseca. Spring and winter wheat will be harvested in a few days, as the grain is maturing rapidly.

Scab is appearing again this year in southern Minnesota. Some fields of spring wheat were reported to have 15 to 20 percent infection on July 2.

Corn is in excellent condition.

Recent visitors at the Station were Messrs. J. A. Clark and J. W. Jones.

TEXAS

AGRICULTURAL EXPERIMENT STATION, COLLEGE STATION (Wheat Improvement,
E. S. McFadden) [June 28]

Yield of flax varieties grown in uniform yield nurseries at College Station, Angleton, and Beeville, Texas, in 1938-39.

Variety	C. I. No.	College Station	Angleton	Beeville	Av. yield (Bu. per acre)
Giza	378	11.4	13.3	6.8	10.5
Bolley Golden	644	10.5	12.0	8.0	10.2
Rio (untreated)	280	11.0	12.6	6.4	10.0
N. D. R. 114	---	9.4	12.1	7.0	9.5
Linota	244	10.4	11.8	5.8	9.3
Redwing	320	10.0	11.8	5.8	9.2
Bison	389	10.0	10.6	6.3	9.0
Rio (treated) ^{1/}	280	9.2	11.8	5.7	8.9
Abyssinian Yellow	36	10.0	11.4	5.0	8.8
Buda	326	9.5	11.2	5.7	8.8
Punjab	20	9.9	8.6	4.4	7.6

^{1/} Seed treated with a fungicide.

Drought during March and April was an important factor in reducing yields. On the other hand, the dry weather of late April was exceptionally favorable for harvesting operations. The total precipitation, from October to April, inclusive, at College Station, Beeville, and Angleton was roughly 5 to 6 inches below normal.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (July 1)

The last half of June was wetter than average and rains interfered with wheat harvest and sorghum planting. At the last of the month sorghum and broomcorn seeding is up to schedule and good stands are being obtained in the project.

The earlier plantings of sorghum and broomcorn have been thinned to stands and cultivated. Work during the next few weeks will be thinning and counting of stands. At present, conditions appear favorable for a satisfactory sorghum and broomcorn project this season.

The maximum temperature for the last half of June was 103° on the 17th and the minimum was 62° on the 24th. The precipitation was 1.98 inches, or a total of 3.97 inches for the month.

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (July 4)

Harvesting of the cereal nursery was started on May 28 and was well under way by June 10. Except for Safflower and Chia samples (which are still in flower) the harvest was complete by June 20. Threshing was started on June 22 and is nearly completed.

The past season started off with an unusually dry fall in 1938. The winter was mild though there was an abnormally large rainfall in January and February. March, April, and May were so dry at times that considerable firing of plants occurred regardless of date of seeding, although the damage was greatest in the earlier seedings. However, opportune rains fell in time for most varieties to recover.

Varietal plot yields in 1939 were high but not so high as in 1938. However, test weights promise to be higher. The following average yields from wheat varieties grown in quadruplicated 1/47th-acre plots were obtained.

Variety	C. I. No.	Av. yield (Bu. per acre)
Cheyenne	8885	42.9
Kawvale x Tenmarq	11669	42.1
Chiefkan	11754	41.4
Oro	8220	40.4
Kanred	5146	39.8
Kharkof	1442	39.5
Daane selection H-59-C	----	39.5
Quivira	8886	38.7
Turkey (local strain)	----	38.6
Sibley 62	11523	38.6
Blackhull	6251	38.4
Early Blackhull	8856	38.2
Oro x Tenmarq	11673	37.5
Blackhull x Oro	11961	37.0
Tenmarq	6936	36.4
Tenmarq x Nebraska 28	11847	36.4
Denton	8265	35.6
Turkey selection	10016	35.3
Kawvale	8180	34.1

Test weights of grain and yields of wheat, barley, and oats in nursery rows have not yet been taken.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (July 3)

If weather conditions had been favorable for harvesting, most of the winter wheat in Kansas would now be harvested and one of the earliest harvests on record would have occurred. However, heavy rains have greatly slowed up the harvest in most parts of the State and in some localities have brought it to a halt. Thousands of acres of fine wheat in eastern and south-central Kansas, that should have been cut two weeks ago, still have been untouched. Severe wind, hail, and rain storms have put much of this wheat in such a condition that only part of it can be salvaged and that part will be very poor in quality.

As a consequence of bad harvest conditions, it now seems unlikely that the Kansas yield will be much in excess of the 106,500,000 estimate made in early June, although it seemed for a time that that figure might be exceeded. Much of the grain now going to market is low in st weight and badly bleached, owing to the wet harvest.

Conditions this spring were almost the exact opposite of those usually recorded in the central and southern Plains area. This year dry weather occurred in April and May, when rains usually fall; June, which usually is dry and hot, was a cool, wet month with rainfall far above normal. As a consequence of unusual conditions, there was not the usual difference in the maturity of winter wheat in different parts of the State. Wheat was ready to cut in nearly all parts of the State about June 20 to 25.

Harvest of winter wheat in the rust nursery began on June 20 and all harvesting was finished on June 30. Several thousand plant selections were made among hybrid populations and threshing will begin on July 5.

Considerable leaf rust developed on winter wheat in the northern half of Kansas about June 15 and infection was heavy in the later fields before maturity. In general, however, the rust came too late to do much damage. Stem rust infection was heavy on late wheat in northeastern Kansas by June 20 and damaged some fields rather severely.

Recent Station visitors were Messrs. H. A. Rodenhiser, T. R. Stanton, F. A. Coffman, and G. A. Wiebe.

COLORADO

AGRICULTURAL EXPERIMENT STATION, FORT COLLINS (Wheat Improvement, J. J. Curtis). [July 5]

The precipitation during the last half of June was about normal and exceeded that for the same period in 1938 by 0.80 inch. The rainfall for 1939 was 1.06 inches and only 0.26 inch for the same period in 1938. The average rainfall for the whole month of June is 2.36 inches covering the past 31 years, while the total for June of this year amounted to only 1.41 inches. The maximum temperature was 104° on June 18 and the minimum, 40° on June 19.

The sorghums planted in the varietal experiments emerged to good stands on June 19. The proso and foxtail millet variety experiments were planted June 21 and emerged to fair stands June 29. The rate-of-seeding proso experiment was also planted on June 22. The date-of-seeding corn experiment for the June 20 planting was sown on that date.

Harvesting of variety test field plots began June 26 and will be completed the first part of July. Barley, oats, and spring wheat sown on cornland are very short and will not be harvested for yield. Harvesting of barley and oats in the nursery was also started.

Land being fallowed was worked with a rod weeder in order to kill a light growth of weeds.

Grasshoppers continued to damage small grains, especially spring wheat and oats. However, bait spread on several occasions seemed to help in controlling them.

Mr. J. A. Clark visited the Station June 27 to look at the spring wheat. Dr. G. A. Wiebe inspected the barley nursery and the field plots on June 29.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, C. Brinsmade, Jr.) (July 5)

The writer returned ³ _F July 4, after being away since June 16, to find that crops and weeds had made surprisingly luxuriant growth during the last half of June. The precipitation during this period was 1.96 inches, of which 1.13 was recorded on June 17. The total precipitation in June was 4.65 inches, which is about 1 1/2 inches higher than the average for the past 25 years. The total precipitation for the first six months of 1939 was 9.09 inches, which is 0.84 inch higher than the average for the past 25 years. The rainfall in July also made a good start with 0.64 inch during the first four days.

Stem rust on wheat was first noted June 29 and now may be found readily on all susceptible varieties. Leaf rust is prevalent on susceptible varieties and many leaves show very heavy infection. Black chaff is strikingly evident on some wheat varieties but is not generally prevalent in the nursery because most varieties showing black chaff in 1938 were eliminated.

Wheat, oats, and barley in plots and nurseries are nearly all fully headed. Flax in plots and nurseries is just beginning to bloom.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (July 3)

The month of June was unusually favorable for cereal crops except corn and sorghum. Several good rains occurred and lighter showers were frequent. Crops have not suffered from lack of moisture since the middle of May. Cool weather prevailed during most of the month, the maximum temperature being 87°.

Spring wheat, oats, and barley are in excellent condition, early varieties being nearly fully headed and late varieties heading. Corn and sorghum were retarded by cool, cloudy weather but have improved during the few warm days during the past week.

The first leaf rust was found on winter wheat on June 19 and the first stem rust on June 30. There is a light sprinkling of stem rust on susceptible varieties of both winter and spring wheat and leaf rust is becoming more abundant.

The precipitation for June was 4.46 inches, or 1.22 inches above normal. The precipitation for 1939 to June 30 was 10.54 inches, or 2.22 above normal.

Cereal crops at the Substation appear in better condition than for many years. The chief menace now is grasshoppers which are numerous on some farms although thinned out very much at the Substation and on many farms by repeated poisoning.

Mr. J. A. Clark visited the Substation on July 1.

On June 19 and 20 the Substation was visited by a large number of farmers, county agents, and elevator men who were in Dickinson attending the Two-day Grain School conducted cooperatively by the Extension Division of the North Dakota Experiment Station, the Northwest Crop Improvement Association, and the Federal Grain Supervision. Considerable interest was shown in the experimental work at the Substation, including varieties and hybrid selections of spring wheat.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (July 3)

After such a dry hot May, June has been a very acceptable change for the better. Temperatures and rainfall were both normal. All crops responded surprisingly to the favorable conditions and the improvement of cereals has been especially marked. However, at the end of the month the soil was dry and beginning to crack. Temperatures recently have been above 90° several days, and normal July rainfall will be necessary to bring the crop through to harvest satisfactorily.

Grasshoppers are again becoming active with warmer weather and will be increasingly difficult to control. They are just beginning to fly.

The first stem rust was observed on Liguleless on June 26. Since that date dews, temperatures, and wind have been favorable for its increase but nothing unusual has been observed.

MONTANA

AGRICULTURAL EXPERIMENT STATION, BOZEMAN (Wheat Improvement, R. H. Bamberg) (June 30)

Most sections of the State have received more than normal precipitation during June. At Bozeman, the total precipitation for the month to date has been 3.71 inches compared with an average of 2.48 inches. Moccasin and Havre each have had approximately 4 inches during the month.

At Bozeman, all the winter wheats and many of the barleys are headed and all grains are in excellent condition. Low temperatures approaching frost have retarded growth of crops other than grains until this week.

At Moccasin, on June 16 winter wheats were headed and spring grains making rapid growth. Stands were better and the outlook for good yields of both winter and spring grains were better at the station than for the past three years.

Prospects for good yields seem good over most of the State if grasshoppers can be checked in the eastern counties.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (July 1)

The mean temperature for June was 61.6°, which is the coolest temperature recorded for over 10 years. Cereal crops have grown well where moisture has not been deficient. Several substantial showers have fallen during the month but not sufficient to keep crops growing satisfactorily. The entire spring wheat nursery has been irrigated twice up to this time and may yet require another application of water. Irrigation water is becoming noticeably deficient, promising to be serious for late maturing crops.

All small grains have headed and in most cases have made abundant growth. Lodging is not yet serious in the barley nursery, which should ripen within a few days.

In general, diseases of small grains are less serious than usual for this time of year. There is some Helminthosporium gramineum and H. sativum as well as loose and covered smut in the barley. A few barley plants show Bacterium translucens. No stem rust has yet been observed.

Most of the winter wheat is spotted and relatively poor. Only a light smut infection has been observed thus far. Even where the low bunt has been applied to the soil infection is low.

Dr. H. A. Rodenhiser was a Station visitor during the latter part of June.

Dr. A. E. Brandt is teaching a course in experimental design for members of the Utah Experiment Station during the summer.

ARIZONA

AGRICULTURAL EXPERIMENT STATION, TUCSON (Cereal Agronomy, A. T. Bartel) (July 5)

The mean temperature during June was 82.6°, only 1.4° above normal. There were 16 days with temperatures of 100° or over. No rainfall was recorded.

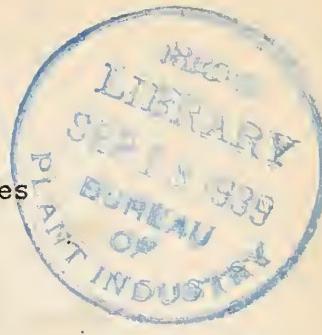
All small grains at Tucson and Mesa have been threshed. The sorghum nursery at Tucson was planted on June 30.

The yields of barley varieties grown in three 1/35th-acre plots at the Salt River Valley Experiment Station, Mesa, were as follows:

Variety	C. I. No.	Yield (Bu. per acre)
Vaughn	1367	99.2
Atlas x Vaughn, Ariz. 257	----	96.3
Atlas x Vaughn, Ariz. 269	----	96.3
Scarab	995	89.7
Common Six-Row	4625	86.8
Union Beardless	5976	84.6

C E R E A L C O U R I E R

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No. 11

Personnel (July 11 - 25) and Field Station (July 1 - 15)

PERSONNEL ITEMS

Dr. Charlotte Elliott spent July 19 at the experimental corn plantings at Arendtsville, Pa., investigating the bacterial wilt disease.

Mr. L. W. Kephart left July 20 to inspect dodder control experiments in North Carolina.

Dr. H. B. Humphrey left Washington July 18 on a trip to Ohio, Michigan, Wisconsin, Minnesota, South Dakota, and North Dakota, in connection with the cereal rust investigations.

Dr. S. C. Salmon left Washington July 19 on a 7-week weed research trip to Minnesota, North Dakota, Montana, Washington, Idaho, Oregon, California, Nevada, Colorado, Kansas, Iowa, and western Canada.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. Mitchell Jenkins)
(July 7)

Weather conditions in June were about normal. The maximum temperature was 94°, the minimum 67°, and the average mean 82°.

The total precipitation of 3.94 inches was recorded on 15 days, and was 0.25 inch less than the 29-year average for the same period.

The total rainfall, although below normal, was so distributed that it caused great inconvenience in the cultivation of nonirrigated crops. The only dry period in which cultivation could be done satisfactorily was from the 22d to the 28th. For a while it was feared that the cotton plots could not be freed of grass before it damaged the crop seriously.

The rice plots are in very good condition. The frequent rain and cloudy weather in June seemed to cause a vigorous growth of the plants.

Aside from the presence of grass on the levees and roadways, that had to be neglected during June because of a shortage in funds, the general condition on the Station is good.

The commercial rice crop appears to be good and less diseased than it has been at this season in the past several years.

Mr. U. U. Sanders of Aguadilla, Puerto Rico, was a Station visitor June 29.

Mr. Alfredo Gaustella, of Havana, Cuba, a recent graduate of Louisiana State University, made his headquarters at the Station during June while acquainting himself with the rice industry of Louisiana. Mr. Gaustella expects to return to Cuba early in July where he is to manage a large plantation, the greater portion of which is to be devoted to rice.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (July 17)

Harvest of winter and spring wheat is nearly completed in southern Minnesota. Fields of winter wheat which were not injured by winterkilling should produce a good yield and quality of grain. Spring wheat stands appear thin, due to the drought at the time the plants were tillering. There does not seem to be much damage from either leaf or stem rusts in this area, although both are prevalent.

Harvesting of winter wheat is now in progress at University Farm.

Leaf rust notes have been taken on all spring wheat plots and nurseries. There was heavy infection on susceptible wheat varieties.

The precipitation during the first half of July was 0.88 inch. The maximum temperature was 94°, recorded on July 12.

Corn is reported to be in excellent condition and reports indicate a bumper crop.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (July 1)

Meteorological data recorded for June were as follows: Maximum temperature 101°, minimum 68°, mean 81.8°. The precipitation was 3.06 inches. Mean temperature for the month was 1.4° above normal and the precipitation 0.26 inch above normal. Precipitation was recorded on 8 days and has interfered with threshing operations in the county.

Harvesting of small grains was completed during the first 10 days of June under favorable conditions. Threshing is nearly completed in the county. All small grains have yielded more than expected earlier in the season. Many fields of wheat have averaged above 30 bushels, oats have yielded from 30 to 90 bushels per acre, and barley 30 to 70 bushels. One increase field of New Nortex oats grown by the Substation yielded 86 bushels per acre. The increase field of Wintex barley yielded approximately 55 bushels. This new variety is being distributed for the first time this season.

Yields in the field plot experiments are enclosed. The bunt-resistant Oro x Tenmarq strains was the leading wheat variety. The new rust and smut-resistant oat strains again yielded well in comparison with standard varieties, and Wintex barley again leads the barley varieties in yield.

The writer, in company with Dr. P. C. Mangelsdorf, visited the experiments at the new Bushland Experimental Station near Amarillo, Texas, June 14-17. A new disease of wheat, a type of foot-rot apparently caused by a species of Pythium, is causing considerable damage in the south Plains area this year. Final identification is being made by pathologists at the Texas Agricultural Experiment Station.

Yields of winter wheat varieties grown in plots at Texas Substation No. 6,
Denton, Texas, 1939.

Variety	Number		Rust		Loose smut	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	T. S.	Leaf	Stem			
			Pct.	Pct.	Pct.		
Oro x Tenmarq selection	11673	-----	10	2	T	30.9	58.5
Denton x Kanred selection	-----	-----	18	13	T	29.4	58.0
4-33-28	-----	-----	30	10	T	28.9	60.0
Chiefkan	11754	23276	3	3	T	27.9	58.0
Kawvale x Tenmarq selection 35-34-96	11953	-----	18	8	T	27.6	57.0
Martin x Tenmarq selection 50-33-63	11805	-----	3	2	O	27.0	58.5
Kawvale x Tenmarq	11669	-----	23250	13	2	26.9	59.0
Campbell Mediterranean	-----	-----	30	15	1	26.9	59.5
Clarkan	8858	20400	32	1	TT	26.7	58.0
Quivira	8886	15833	33	8	T	26.5	57.5
Tenmarq	6936	12578	15	10	T	26.3	57.5
Martin x Tenmarq selection 50-34-128	11823	-----	8265	9236	T	25.1	58.0
Denton	-----	-----	8856	15838	43	24.1	59.5
Early Blackhull	-----	-----	5146	11763	55	23.7	57.5
Kanred	-----	-----	6471	7082	50	23.5	57.0
Fulcaster	-----	-----	10086	3015-81	6	23.5	58.0
Mediterranean selection	-----	-----	Blackhull	6251	50	23.4	58.0
Blackhull	-----	-----	1442	16830	3	22.8	57.0
Kharkof	-----	-----	11525	5933-23	T	22.7	59.5
Mediterranean selection	-----	-----	Kawvale	8180	9	22.7	57.0
Kawvale	-----	-----	11526	12577	3	21.8	58.5
Mediterranean selection	-----	-----	5933-34	6	1	2	58.5

Yields of fall-sown oat varieties grown in plots at Texas Substation No. 6,
Denton, Texas, 1939.

Variety	Number		Rust		Lodg- ing	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	T. S.	Crown	Stem			
			Pct.	Pct.	Pct.		
New Nortex	3422	26155	T	T	O	77.8	32.5
Ferguson No. 922	2150	9400	T	2	O	77.2	32.0
Nortex	2382	9235	T	T	O	76.8	32.0
Texas Red Rustproof selection	-----	1415-12	T	T	O	76.8	31.5
Nortex x Victoria 11-35-41	3535	-----	O	T	O	75.9	33.0
Texas Red Rustproof selection	2503	1118-69	T	T	O	73.9	31.5
Appler x Bond 15-34-64	-----	-----	O	T	O	73.9	32.0
Nortex x Victoria 11-34-103	-----	-----	O	T	O	73.2	31.5
Fulghum x Victoria 12-34-13	3529	-----	O	T	O	68.3	35.0
Fulghum x Victoria 12-34-33	3531	-----	O	T	O	67.0	36.0
Frazier	2381	9234	T	T	13	61.2	37.0

Yields of spring-sown oat varieties grown in plots at Texas Substation No. 6, Denton, Texas, 1939.

Variety	Number		Rust			Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	T. S.	Crown	Stem	Stand		
	Pct.	Pct.	Pct.				
Frazier	2381	9234	T	T	97	67.3	33.0
Fulghum x Victoria 12-34-13	3529	----	O	T	90	60.5	32.0
Fulghum x Victoria 12-34-33	3531	----	O	T	90	59.9	32.5
Texas Red Rustproof	2503	1118-69	T	3	86	55.9	26.5
Ferguson No. 922	2150	9400	T	2	81	55.7	28.0
New Nortex	3422	26155	T	3	86	54.9	27.5
Nortex	2382	9235	T	T	84	54.3	27.5
Texas Red Rustproof	----	1415-12	T	T	78	54.1	26.5
Appler x Bond 15-34-64	----	----	O	T	70	50.8	26.5
Nortex x Victoria 11-35-41	3535	----	O	3	70	49.5	28.0
Nortex x Victoria 11-34-103	----	----	O	1	63	49.0	27.5

Yields of fall-sown barley varieties grown in plots at Texas Substation No. 6, Denton, Texas, 1939.

Variety	Number		Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	T. S.		
Wintex	6127	23258	48.3	48.0
Harlan Hybrid 1-33-179	6500	----	42.8	47.0
Ferguson Texas Winter	6498	24933	40.9	47.0
Finley	5901	12576	43.8	46.0
Tennessee Winter, Winkelman	6128	23259	45.4	46.0
Bailey	5902	23241	40.7	45.5
Harlan Hybrid 1-33-7	6499	----	40.9	45.0
Harlan Hybrid 1-33-249	6501	----	42.6	45.0
Harlan Hybrid 1-32-103	6502	----	47.4	45.0
Tennessee Winter	6125	15825	34.9	43.5
Do.	3545	15826	32.4	43.5

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (July 17)

The first half of July was typical western Oklahoma summer, hot and dry. The wet harvest suddenly changed into regular summer, the last rain being 1.14 inches on July 1.

Sorghums and broomcorn have been thinned to stands, the thinning being followed by cultivating as closely as possible. Growth of the sorghums has been rapid and the project is in good condition at present. Moisture will be needed this month for the rapid growth and development to continue.

Maximum temperature for the first half of July was 103° on the 7th and the minimum for the same period was 59° on the 10th. The precipitation was 1.14 inches in one rain on the 1st.

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (July 17)

Threshing of nursery bundles was completed on July 5. Yields were not so good as in 1938 though test weights were higher, the latter averaging nearly 60 pounds. Wheat on farms, in many instances, yielded several bushels per acre more than was predicted. Crop estimates for Oklahoma have been boosted from about 44,000,000 to 48,000,000 bushels. Late rains delayed harvest in many parts of the State, resulting in some lodging, shattering and considerable bleached wheat.

For the first time in about five years the black chaff color developed abundantly in Blackhull, Early Blackhull, and Chieftan. Natural crosses of Tenmarq with Blackhull that showed up in many fields have caused considerable discussion among certified seed growers. The chaff color appeared to be the main differentiating character as the head and kernel shapes and beak type of these off-color heads could not be distinguished from those of Tenmarq.

Yields of winter wheat varieties grown in replicated rod row tests in the uniform yield nursery.

Variety	C. I. No.	Av. yield (Bu. per acre)
Kawvale x Tenmarq	11950	34.5
Do	11953	34.3
Early Blackhull x Tenmarq	11952	33.9
Kanred-Hard Federation x Minhardi-Minturki	11970	33.8
Sibley No. 62	11523	33.3
Fort Collins selection	11971	33.0
Kharkof	1442	32.9
Nebred	10094	31.6
Early Blackhull	8856	31.4
Kawvale x Tenmarq	11951	31.0
Do	11750	30.8
Do	11669	30.5
Oro x Tenmarq	11673	30.2
Kanred x Marquis	11589	29.9
Oro x Fulhard	11579	29.8
Blackhull	6251	29.7
Tenmarq x Minturki	11580	29.6
Early Blackhull Hybrid	11846	29.3
Blackhull selection	11737	28.8
Tenmarq x Nebr. No. 28	11847	28.7
Kanred x Hope-Hard Federation	11843	28.7
Cheyenne selection	11666	28.0
Oro x Tenmarq	11672	27.6
Turkey selection	11577	27.3
Kanred x Blackhull	11844	27.1
Turkey x Marquis	11747	26.8
Martin x Tenmarq	11804	26.8
Minturki x Blackhull	11815	25.2
Do	11671	25.1
Kanred x Marquis	11746	24.3

Yields of the 20 highest-yielding winter wheat varieties in the Woodward yield nursery grown in four 3-rod row plots, 1938-39.

Variety	C. I. or hybrid no.	Av. Yield (Bu. per acre)
Ceres-38h x Kawvale	Wd. 1151	45.1
Cheyenne x Early Blackhull	Wd. 1126	43.6
Cheyenne	8885	41.3
Cheyenne x Early Blackhull	35h2287-6	41.2
Blackhull x Hard Federation selection	36h763-89	39.9
Cheyenne x Early Blackhull	Wd. 1127	39.7
Tenmarq x Blackhull	Wd. 1174	39.2
Akron selection	11660	39.1
Blackhull x Hard Federation selection	Wd. 1175	38.9
Tenmarq x Blackhull	Wd. 1173	38.6
Blackhull x Hard Federation selection	36h763-81	38.4
Do	35h2711-9	38.4
Tenmarq x Blackhull	Wd. 1137	38.0
Tenmarq	6936	38.0
Kharkof x Early Blackhull	Wd. 1131	37.5
Quivira x Tenmarq	Wd. 1157	37.5
Blackhull x Hard Federation selection	35h2711-3	37.5
Oro	8220	37.4
Blackhull x Hard Federation selection	Wd. 1133-1	36.9
Do	36h769-161	36.8

Yields of 20 highest-yielding spring oat varieties grown in three 3-row plots at Woodward, Okla., 1939.

Variety	Hybrid No.	Av. yield grams per 8-foot row
Kanota x Markton	Ks. Sel. 313896	107
Kanota x Victoria	Tex. 13-33-70	90
Fulghum x Markton	Ks. row 1275	88
Do	Ks. Sta. 6136	88
Do	Ks. row 2565	86
Do	Ks. Sel. 314138	86
Do	Ks. Sel. 333171	85
Do	Ks. Sel. 333378	83
Do	Ks. row 1284	83
Do	Ks. Sta. 6138	82
Nortex x Victoria	Tex. 11-35-41	81
Fulghum selection	H.C. 713	81
Fulghum x Burt	Mo. 03648	80
Fulghum x Victoria	Tex. 12-34-19	78
Fulghum x Markton	Ks. Sel. 303652	78
Do	Ks. Sel. 333293	77
Kanota x Markton	Ks. Sel. 322629	77
Fulghum x Markton	Ks. Sel. 333260	75
Fulghum x Victoria	Tex. 12-34-33	75
Do	Tex. 12-33-90-1	73

Average yield of 20 highest-yielding fall-sown barley varieties grown in three 3-row plots at Woodward, Okla., 1938-39.

Variety	C. I. or hybrid no.	Av. yield (Bu. per acre)
Alaska	4106	36.1
Stillwater variety	Wd. 2009	36.1
Woodward selection	35h9-24	35.3
Kansas S.C.	6376	34.9
Ward selection	35h11-3	34.3
North Carolina No. 11	-----	34.0
Woodward selection	35h9-9	33.7
Wintex	6127	33.5
Woodward selection	35h10-23	33.2
Do	35h2	32.8
Do	35h9-23	32.3
Do	35h9-12	32.0
Do	35h9-22	32.0
Do	35h9-5	31.8
White Winter	34h2012-1	31.5
Woodward selection	35h-10-17	31.4
Stillwater variety	Wd. 2008	31.4
Woodward selection	35h10-30	31.0
Do	35h10-3	30.9
Unknown	35h11-?	30.7
Wisconsin Winter	2159	30.4

Average yield of 20 highest-yielding spring barley varieties grown in three 3-row plots at Woodward, Okla., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)
Atlas	4118	36.6
Blackhull selection 1180	6009	33.9
Vaughn	1367	33.8
Atlas x Vaughn 36F.C. 3428	-----	33.6
New South Wales	6012	33.4
Vance Smyrna	4585	33.3
Blackhull selection	5679	33.2
Atlas x Vaughn 36F.C. 3424	-----	31.7
Stavropol H.C. 249	5913	30.7
Flynn Selection 1	5911	30.4
Heron	1299	30.1
Club Mariout	261	29.6
Hero	1286	28.7
White Smyrna	910	27.2
Daane selection 113	6140	27.0
California Mariout	1455	25.6
Perth W. Australia	6025	24.2
Trebi	936	24.0
Sandrel	937	23.7
Spartan	5027	22.6

NEBRASKA

AGRICULTURAL EXPERIMENT STATION, LINCOLN (Wheat Improvement, K. S.
Quisenberry) [July 20]

Average yield per acre and weight per bushel of winter wheat varieties
grown in five 1/40th-acre plots at Lincoln, Nebr., 1938-39.

Variety	Number		Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	Nebr.		
Oro x Tenmarq	11672	1103	22.8	57.9
Clarkan	8858	1084	22.8	59.0
Cheyenne	8885	1050	22.7	59.6
Kawvale x Tenmarq	11669	1086	22.7	57.1
Turkey selection	11577	1081	23.7	58.0
Kanred x Blackhull	11844	1098	22.4	56.5
Tenmarq x Kawvale (Sel. No. 23866)	-----	-----	22.2	57.4
Chiefkan	11754	1100	21.9	59.3
Turkoy (Seward Co.)	-----	1005	21.9	57.1
Turkey x Minturki	11580	1094	21.9	56.5
Kawvale x Tenmarq	11750	1102	21.6	55.3
Tenmarq x Kawvale (Sel. No. 23908)	-----	-----	21.3	56.2
Turkey (So. Dakota)	3689	1011	21.2	58.2
Cheyenne selection	11666	1087	21.2	58.3
Oro x Tenmarq	11673	1101	21.1	57.7
Nebraska No. 60	6250	60	20.9	57.4
Kharkof	1442	1010	20.9	57.2
Turkey	-----	312	20.8	57.0
Blackhull selection	11737	1093	20.3	59.3
Blackhull	6251	1004	20.1	58.3
Tenmarq	6936	1030	20.0	58.1
Turkey	-----	1	20.0	57.1
Oro	8220	1032	19.8	58.3
Turkey (Sonderegger)	-----	-----	19.8	57.9
Kanred	5146	-----	19.7	57.0
Nebred	10094	1063	19.3	57.8
Turkey selection	10015	1062	19.3	57.9
Minturki x Blackhull	11815	1099	19.0	58.1
Kawvale	8180	1052	17.5	53.9
Iobred	6934	1023	17.4	58.3
Turkey selection	10016	1069	17.4	57.7

Average yield per acre and weight per bushel of spring wheat varieties
grown in five 1/40th-acre plots at Lincoln, Nebr., 1939.

Variety	Number		Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C. I.	Nebr.		
Pilot	11428	1107	9.2	55.9
Reward	8182	1073	9.1	58.4
Java	6585	1009	8.7	57.3
Mercury	11872	1110	8.4	56.1
Ceres	6900	1028	8.2	56.9
Premier	11940	1111	8.1	57.2
Thatcher	10003	1106	7.7	53.2
Rival	11708	1108	7.0	55.0
Marquis	3641	1001	6.9	54.1
Merit	11870	1109	6.5	53.5
Renown	11947	1112	6.3	52.9
Mindum	5296	1080	6.2	56.5

Average yield per acre and weight per bushel of oat varieties grown in five 1/40th-acre plots at Lincoln, Nebr., 1939.

Variety	Number			Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C.	I.	Nebr.		
Fulton	3327	550		31.9	36.1
Marion	3247	547		30.6	34.2
Columbia	2820	538		28.9	34.5
Victoria x Richland	3310	548		28.8	34.0
Do	3314	549		28.2 ^{1/}	33.8
Kherson (Nebr. No. 5)	1208	505		28.2	29.7
Burt	1222	503		28.1	32.7
Victoria x Richland	3313	542		27.4	33.6
Burt selection	2886	518		26.5	30.1
Hancock	3346	554		26.2	32.5
Brunker	2054	535		26.2	33.6
Victoria x Richland	3302	544		26.1	32.6
Kherson (common)	459	501		26.1	30.7
Kherson (Nebr. No. 21)	841	504		26.1	30.9
Trojan	2491	552		26.0	31.2
Markton x Logold	3236	543		25.8	32.5
"Marr"	----	---		25.6 ^{2/}	34.3
Richland	787	540		25.4	32.9
Rainbow	2345	551		24.8	31.2
Richland selection 52	3008	541		24.8	33.5
Boone	3305	553		23.4 ^{3/}	33.8
Kanota	839	508		23.3	32.4
Logold	2329	512		22.7	32.2
Fulghum (Coker No. 3)	3666	539		21.6	32.4

- 1/ Four plots only.
2/ Two plots only.
3/ Three plots only.

Average yield per acre and weight per bushel of barley varieties grown in five 1/40th-acre plots at Lincoln, Nebr., 1939.

Variety	Number			Yield (Bu. per acre)	Test weight (Lbs. per bu.)
	C.	I.	Nebr.		
Lico	6279	128		16.2	41.0
Spartan	5027	111		15.5	46.9
Flynn selection 1	5911	107		14.2	43.2
Club Mariout	261	121		13.9	40.0
Ezond	6265	115		12.4	42.2
Trebi x Velvet selection No. 4 (Mont. 1621)----	125			12.4	44.8
Atlas x Vaughn	----	130		12.4	41.5
Velvon	6109	127		11.4	45.5
North Platte No. 1	5266	116		10.9	37.0
Short Comfort	5907	104		10.0	43.5
Atlas x Vaughn	----	129		9.2	42.0
Trebi	936	105		8.9	41.7
Wisconsin Pedigree No. 37	5028	113		8.8	43.6
Glabron	4577	109		8.7	43.6
Wisconsin Pedigree No. 38	5105	119		8.4	42.1
Comfort	4578	108		7.6	41.9
Loglos	6239	124		6.9	42.7
Velvet	4252	120		6.2	42.4
Smooth Awn x Manchuria (Mont. 1618)	----	126		6.2	44.6
Manchuria (Minn. No. 184)	2330	102		5.5	43.1
Wisconsin Pedigree 5-1	4666	122		4.2	42.8
Manchuria	2947	123		3.7	40.5
Composite Cross No. III	6144	---		5.6 ^{1/}	40.0

- 1/ Single plot.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (July 17)

Excellent growing weather prevailed during the first half of July. Temperatures were generally high but rains provided adequate moisture for continued growth.

Early varieties of wheat, oats, and barley in varietal plots are almost ripe. Wheat varieties in nursery rows are turning but will ripen some days later than in the plots. Early varieties of flax in both plots and nursery rows are practically through blooming.

Stem rust has developed very little during the past 10 days and can have little effect on yield or test weight, even on Marquis. Stem rust is fairly heavy on the lower sheaths of some varieties in the rust nursery and on rust-susceptible varieties in nursery border rows but there is still very little on the necks.

Leaf rust has developed to a heavy, uniformly distributed infection on susceptible varieties so that good leaf-rust notes are being obtained.

A little stem rust has been noted on Markton oats but no crown rust has yet been observed. A little rust has been noted on flax but the infection is not generally distributed.

The maximum temperature was 98° and the minimum, 51°. The precipitation was 1.39 inches.

Visitors included Messrs. G. A. Wiebe, J. A. Clark, E. B. Aussemus, H. C. Hanson, E. A. Helgeson, L. R. Waldron, R. W. Smith, and A. C. Dillman.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (July 18)

Early varieties of wheat, oats, and barley are ripening and the harvesting of cereal varieties will begin the latter part of this week. A few fields of early barley and oats are being harvested in the neighborhood. There is a prospect for an excellent crop of wheat, oats, and barley in this vicinity, except in fields that were "stubbled in" or where other poor farm methods were practiced. At the Substation yields should be better than in many years, barring injury from hail and from hoppers which, at present, seem to be thinning out slightly.

In a recent trip to visit the Mandan and Fargo experiment stations, the best crops appeared to be in the region extending from Dickinson eastward to Hebron, a distance of about 40 miles.

A small amount of both leaf and stem rust is present on susceptible varieties of wheat and barley but no serious losses from this source should occur here, except possibly on late-seeded grain.

Visitors this month have included Messrs. J. A. Clark and G. A. Wiebe, of the Division of Cereal Crops and Diseases, and Director H. C. Hanson, Dr. L. R. Waldron, Dr. E. A. Helgeson, and Mr. F. G. Butcher, of the North Dakota Agricultural Experiment Station.

The precipitation this month to date has been nearly 2 inches. Warm, sunny weather has prevailed most of the time, with the maximum temperature about 90°.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (July 22)

After a very dry May and a normally wet June, July has been extremely dry at Fargo and Langdon.

At Fargo the nursery is maturing rather rapidly. Although the wheat nursery is holding on fairly well and filling satisfactorily, yields and test weights will not be high.

At Langdon the grasshoppers moved in about July 11th and caused severe damage, especially to late-sown material. Oats is a total loss. The main durum and common wheat yield nurseries, early sown, have lost all leaves and many heads have been chewed, but most of the primary heads are intact. Hoppers have become less numerous and, barring another attack, yields will be worth taking. However, drought and hot winds are rushing harvest two or three weeks earlier than average, and only immediate rains could prevent much shriveling. Small increases of new durum hybrids, increased at Mesa, Arizona, last winter, are almost a total loss.

CALIFORNIA

UNIVERSITY FARM, DAVIS (Cereal Agronomy, C. A. Suneson) [July 19]

General summary of conditions observed in travelling through the western region.

In northern California counties subnormal precipitation was general and abnormally early maturity resulted. Frost injury and frost-induced sterility were seen in several sections.

Frost injury was seen also in Sherman County, Oregon, where a near-normal crop of both winter and spring wheat seemed likely, even though crested wheat grass in 12-inch rows was not producing any seed. Cereal crops at Pendleton were rather poorly rooted, but near normal. The Jenkin variety of wheat was completely winter-killed at Union, but several winter barleys, including Missouri Early Beardless, survived well.

A near-average crop characterized the Lind, Walla Walla, and Ponteroy sections. Wireworms again destroyed experiments at Prosser. Around Pullman crops were showing near-normal growth only where cultural practices did not limit nitrogen. In southern Idaho and Utah winter wheat stands were thinner than usual, but actual winterkilling was seen only at Tetonian.

Much of the current crop in central Oregon and Washington will be matured with only a primary root system.

Spring grains in Willamette Valley promise better yields than last season because of timely June rains.

Diseases were conspicuously absent. Very few fields seen in Oregon, Washington, and northern Idaho had sufficient smut to be a grading factor. The near elimination of smut in this area is certainly noteworthy. Even in southern Idaho and Utah, considerably less smut than last season is suggested by my observations.

Dwarf smut was much less prevalent than usual, particularly at High Prairie, northern Idaho, and Gallatin Valley.

Stem rust, widespread and severe over much of the region last year, was not even seen outside California this year. Leaf rust was seen at a few scattered locations and promised to become abundant at Sandpoint, Idaho. Stripe rust was also seen at several locations, but in no case was there much of it.

The new varieties Idaed, Lemhi, Baart 38, and White Federation 38 seem quite acceptable in areas where they have been released. "Michel's grass," in two-year-old stands, is showing survivals of 5 to 40 percent. Agropyron x wheat hybrids produced and selected by W. J. Sando, and quite desirable as to growth habit and kernel type, likewise appear to be uncertain as regards the perennial habit.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

August 10, 1939

No. 12

Personnel (July 26 - Aug. 10) and Field Station (July 16 - 31)

PERSONNEL ITEMS

Mr. Edgar Brown attended the meetings of the Association of Official Seed Analysts in Madison, Wis., August 1 to 4.

Dr. Charlotte Elliott was at Mineola, L. I., and Spring Valley, Rockland County, New York, on August 7 inspecting sweet corn plots for bacterial wilt. On the following day she was at Geneva, N. Y., looking for bacterial wilt.

Dr. M. T. Jenkins, Dr. M. M. Rhoades, and Dr. L. J. Stadler sailed from New York City on the S. S. Queen Mary on August 9. They will attend the Seventh International Congress of Genetics to be held at Edinburgh, Scotland, August 23 to 30, and will present invitation papers. Other members of the Division who expect to attend the Congress are Mr. W. J. Sando, Dr. E. R. Sears, Mr. T. R. Stanton, and Mr. A. F. Swanson.

RECENT PUBLICATIONS

✓ C. G. Barr. Application of the Ceric Sulphate Method in the Analysis of Carbohydrates in the Roots of *Lepidium* and *Convolvulus*. *Plant Physiol.* 14(2): 285-296, figs. 1-4. April 1939. (Contribution from the Colorado Agricultural Experiment Station in cooperation with the Division of Cereal Crops and Diseases.)

✓ A. T. Bartel and Ian A. Briggs. Small Grain Varieties for Northern Arizona. *Ariz. Agr. Expt. Sta. Bul.* 166, 35 pp., 9 pls. May 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Arizona Agricultural Experiment Station.)

✓ J. G. Dickson, H. L. Shands, A. D. Dickson, and B. A. Burkhardt. Barley and Malt Studies. V. Experimental Malting of Barleys Grown in 1937. *Cereal Chem.* 16(4): 468-480. July 1939. (Based on cooperative investigations between the Division of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station and other States cooperating in the Barley Improvement Council.)

✓ W. L. Goss and Edgar Brown. Buried Red Rice Seed. *Jour. Amer. Soc. Agron.* 31(7): 633-637. July 1939. (Contribution from the U. S. Dept. of Agriculture, Washington, D. C., in cooperation with the State Department of Agriculture, Sacramento, Calif.)

✓ E. S. McFadden. Early Blackhull Resists Stem Rust in Texas. (*Phytopath. Note*) *Phytopathology* 29(7): 644-645. July 1939. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Texas Agricultural Experiment Station.)

✓ W. J. Sando. A Colchicine-Induced Tetraploid in Buckwheat. *Jour. Heredity* 30(6): 271-272, fig. 19. June 1939.

FIELD PAY ROLLS

In typing field pay rolls, please make the carbon on white paper the last copy, because legibility of names and amounts is of least importance on this copy.

H. S. Smith,
Junior Administrative Assistant.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau
B. P. I. Memo. 1053.

August 3, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

Employees of the Bureau in the field frequently have occasion to perform travel with their expenses paid by State Agricultural Experiment Stations or other non-Federal agencies. The travel is official travel in that it concerns the co-operative work on which they are engaged. The travel may be performed on a State authorization, whereas the travel they perform for which we pay is on a Federal authorization.

Hereafter, whenever an employee of the Bureau of Plant Industry performs travel with his expenses paid by a non-Government agency, a letter of authorization must be obtained through the Bureau in the customary way. The source of the funds from which his expenses will be paid must be shown. This letter of authorization will be filed in the Bureau, and be a matter of record for Bureau purposes. Where the travel to be performed covers attendance at a meeting, and has been authorized by the Secretary's Office through approval of Form 61, no letter of authorization is necessary.

It is felt desirable to establish this as a definite procedure in order that employees will be protected in case of injury while performing official travel paid for by a cooperating agency. The letter of authorization in our files definitely establishes the employee's official status. Without this, it may be difficult to establish to the satisfaction of the Employees' Compensation Commission that the employee was engaged on official Bureau business.

Very sincerely,

/s/ E. C. Auchter
Chief of Bureau.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau
B. P. I. Memo. 1052.

August 1, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

We are experiencing difficulty in the payment of vouchers with a discount period of ten days prompt enough to assure this saving. This is particularly true on vouchers received from vendors through field offices.

Section 3184 of the Regulations of the Department states that "It is important that the Government receive the full benefit of all offers of discounts for payment within specified periods. Discounts should not be taken when payment is made after the specified time period has expired, unless authorized in writing by the vendor."

"Where a contract provides for a discount for cash if paid within a fixed time, and the voucher is paid for the full amount, an explanation should be furnished with the voucher showing why the larger amount was paid."

Vouchers must first clear through the division and Bureau accounting units and then be forwarded to the Chief Disbursing Officer, United States Treasury. All of this must be done and sufficient time allowed the Chief Disbursing Officer to write the check within the discount period.

It is of course important that advantage be taken of discounts whenever possible. It is requested that the attention of employees handling vouchers be called to the necessity of giving these vouchers special attention, both in Washington and in the field. Unless these vouchers are given almost immediate attention, it is extremely difficult to clear them through to the Treasury and have the check written within the discount period. All discount vouchers should carry a "rush slip" through the division and the Bureau Accounting Office.

Your cooperation in this matter will be much appreciated.

Very sincerely,

/s/ H. E. Allanson
Business Manager of Bureau.

May 19, 1939

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

Our attention has just been called to the fact that in the solicitation of bids by circular letters, the procedure usually adhered to, it is also necessary to post notices in public places such as post offices.

Standard Form No. 1036, Revised, Statement and Certificate of Award, which is completed and attached to each bid recommendation forwarded to the Division of Purchase, Sales and Traffic, states that if notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made.

In view of the foregoing, it is requested that all employees soliciting field bids be instructed to post such notices in post offices or other public places when soliciting field bids.

In forwarding recommendations covering field bids to the Bureau Property Room, it will be necessary to include in such recommendation a statement as to whether notices were posted in addition to advertising by circular letters and, if not, an explanation of such omission must be made.

Yours very truly,

/s/ Geo. B. Holmes
Geo. B. Holmes,
Jr. Administrative Assistant.

GBH:het

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
Property Room

August 4, 1939

MEMORANDUM FOR HEADS OF DIVISIONS

We have recently received advice from the Division of Purchase, Sales and Traffic to the effect that the Central Supply Section of the Department has negotiated contracts for the rental of typewriters during the period July 7, 1939 to June 30, 1940. Copy of such contract, covering L. C. Smith, Royal, Remington, Woodstock and Underwood typewriters, is on file in this office.

The use of such contracts in the rental of typewriters throughout the continental United States by this Department is mandatory. All orders must be placed through the Central Supply Section here in Washington.

Very truly yours,

/s/ Geo. B. Holmes
Geo. B. Holmes
Junior Administrative Assistant

GBH/bas

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF DIRECTOR OF PERSONNEL
WASHINGTON, D. C.

July 14, 1939

Personnel Circular No. 79

Annual Encampments of Veterans' Organizations

In accordance with the usual custom, employees of the Department affiliated with the American Legion, the United Spanish War Veterans, Veterans of Foreign Wars, may be granted annual leave or leave without pay for the purpose of attending the annual conventions of these Veterans' organizations, providing that such absence does not interfere with the performance of the necessary work of the Department. The dates of the respective conventions are as follows:

United Spanish War Veterans,
Atlantic City, N. J. September 10-14, inclusive

Veterans of Foreign Wars,
Boston, Mass. August 27-September 1, inclusive

/s/ Roy F. Hendrickson
Director of Personnel

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TOHKA

AGRICULTURAL EXPERIMENT STATION, AMES (Corn Breeding, G. F. Sprague)
 (July 31)

Corn pollinating began early in July and will continue for another week or 10 days. Periodic plantings have served to extend the pollinating period materially.

The threshing of varietal and rotation plots is nearly completed. Winter wheat yields ranged around 25 to 35 bushels and oats 50 to 60 bushels. The threshing of nursery material will begin as soon as the last of the varietal plots is finished.

The month of July has been approximately normal with respect to both temperature and rainfall. The minimum temperature was 50° on July 1 and the maximum 100° on July 13. The total precipitation for the month was 3.03 inches. On July 28, 1.28 inches of rain was recorded, the remainder of the month's precipitation falling in light showers.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (Aug. 2)

Harvesting of the cereal nurseries has been completed. Rains during the past few days interfered with the harvesting. Harvest of spring cereals has been completed in the south and central part of the State and threshing is in progress. Reports indicate a fair to good crop in the Red River Valley as a result of rains during the latter part of the season. The crop is spotted, however; some fields are good while others are hardly worth harvesting.

Stem rust has caused comparatively little damage owing to the dry weather during ripening, which hastened maturity, and these conditions were also unfavorable for the development of the rust.

The winter wheat that has been threshed is of good quality and the yields were satisfactory.

Corn continues to be in excellent condition.

The rainfall during July was 2.93 inches. The highest temperature recorded was 95° on July 26 and 31.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (July 31)

Threshing of the small grain nursery was completed during the month. All the grain was of excellent quality and yields were good. Threshing of plant selections and other laboratory work is under way. Compiling of data of yields is well along for the season.

Since most of the June precipitation was received in the early part of the month, the rainfall has not been sufficient for the needs of crops during the past few weeks. Corn was injured somewhat before harvest and feed crops were injured. Cotton has set a fair crop and few insects are bothering it at present owing to the dry weather.

The mean temperature for July was 87.6°, the mean maximum 100.3°, and the maximum, 108°. The precipitation was 0.97 inch, or 1.10 inches below normal. Uniformly high temperatures during the month made the heat rather severe. The mean maximum is the highest since 1934 and one of the highest on record. The maximum temperature of 108° has been exceeded only once.

The writer attended the Field Day at the U. S. Cotton Breeding Station, Greenville, Texas, on July 20, and the Texas Experiment Station workers' conference at College Station on July 10 and 11.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Aug. 1)

A rain and two showers since the middle of July caused summer row crops to make good growth. At present the sorghum and broomcorn project is in good condition but more moisture will be welcome.

Comparable stands were obtained on all the plantings this year, thinning and trimming have been completed for some time, and counting of stands is close to completion. Some of the earlier varieties and earlier plantings are starting to head. Bagging of seed heads will be the next work on the project.

The maximum temperature for last half of July was 107° on the 21st and the minimum for the same period was 60° on the 30th. The precipitation was 1.44 inches in a rain of 1.16 inches and two showers, making a total of 2.58 inches for July.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Foot Rots, Hurley Fellows) (July 29)

Since the heavy rains mentioned in the last Courier, Kansas has been very dry. The corn crop around Manhattan and westward is firing badly and it looks as though the yield will be reduced very much. The daily temperature in most of Kansas has been 100° and over.

The take-all foot rot of wheat in Kansas this year was much less than the writer has ever seen. Nearly all the test plots were a failure from the experimental viewpoint owing to lack of disease. This condition is attributed to the low moisture of April and May during which months the disease usually gains a foothold. The only locality in which much take-all occurred was in the vicinity of Wichita. The records show that more rain occurred in this region during April and May than elsewhere in the State. All the variety tests and other take-all experiments in the greenhouse have been removed. No difference was noticed in the resistance of varieties to take-all. However, the introduction of certain nonpathogenic fungi into naturally infested soil reduced the disease considerably.

This year was ideal for the dry-land foot rot. Wheat in nearly the entire region from Manhattan westward was infested. The same was true for eastern Colorado. As usual it was found that early seeding favored the disease. Dry-land foot rot caused an indirect loss this year. The heads of the diseased plants were slow to emerge from the boot. These boots served as a harboring place for aphids, which damaged the enclosed heads.

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Aug. 5)

A blazing sun, hot winds, and lack of rainfall during the last half of July severely injured corn and other row crops in Kansas. The prospects for a good corn crop were the best in years early in July owing to heavy rainfall in June, but 10 days during which the temperatures exceeded 100° F. caused severe burning. The damage varies with the locality and even in the same field, but it is estimated that the yield has been reduced at least 25 percent.

Half an inch of rain fell in the Manhattan area on July 19 and more than an inch fell on July 25. While these rains were of tremendous value they came too late to save the corn crop. However, they did come at a time very favorable for sorghum and soaked the soil sufficiently for farmers to finish plowing for a wheat seedbed.

An excellent rain of 2.36 inches fell at Manhattan on August 1 and a similar rain is falling today. Vegetation now looks excellent in this locality except for corn fields that have been badly burned in spots.

Threshing of wheat from the rust nursery was completed on July 31. Besides several hundred fixed hybrid lines and varieties that were threshed in bulk, more than 5,000 individual plants were threshed. These represent material in the F₂, F₃, and F₄ generations that are being grown in pedigree lines in the program of breeding for disease resistance. All seed has been arranged in order, and notes on grain characters have been started.

COLORADO

AGRICULTURAL EXPERIMENT STATION, FORT COLLINS (Wheat Improvement, J. J. Curtis) [Aug. 2]

The rainfall for the last half of July was 1.25 inches, which is about normal, and exceeded that for the same period in 1938 by 0.71 inch. The average July rainfall for the past 31 years is 2.53 inches, while the total for July of this year was 1.28 inches. The maximum temperature in July was 107° on the 16th and 20th. This temperature is the highest that has been recorded during the past 31 years at the Station. The minimum temperature was 52°.

Corn has suffered severely because of continued high temperatures and dry winds. However, 0.78 inch of rain which fell July 31 has helped a great deal but it is doubtful whether the corn will recover.

Sorghums were able to remain green and showed again their ability to stand prolonged dry weather.

Threshing of field plots was completed on the 26th and nursery threshing was finished August 1.

Grasshoppers apparently have decreased in numbers, especially since the cereal crops were harvested.

Dr. K. S. Quisenberry visited the Station July 12 and inspected the winter wheat nursery.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Aug. 3)

Hot, dry weather prevailed during the last half of July. The temperature reached 83° or higher every day. Temperatures of 92° or more were recorded on 9 of the 16 days. The maximum temperature was 103° on the 29th and the minimum 54° on the 20th and 21st. A total of 0.30 inch of precipitation was recorded on the 16th and 18th. Only a trace of precipitation has occurred since the latter date. Strong winds, high temperature, and lack of rainfall all combined to cause rapid ripening of crops.

The wheat, oat, and barley varietal plots were harvested on the 20th and 21st. Harvest of the wheat nursery began on the 26th and all but a few late rows have been harvested. Marquis wheat, in spite of fairly heavy stem rust infection, appears to be plumper and of better quality than in any season since 1932. The nursery material has been moved in under cover and will be threshed as soon as possible. The plot material will also be threshed at an early date.

The drought has also caused premature ripening of flax. Early varieties in both plots and nursery are nearly ready to harvest.

Visitors included Messrs. J. A. Clark, A. C. Dillman, H. C. Murphy, M. N. Levine, and H. B. Humphrey.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Aug. 2)

Dry weather prevailed during the last half of July and temperatures were high during the last week. The maximum for July was 102° on the 29th. The hot weather hastened the ripening of the grain and caused some shriveling of kernels in late varieties.

Harvest at the Substation and in the vicinity is nearly ended and the threshing of oats and barley has begun. The best yield obtained at the Substation so far was 90 bushels per acre from a rotation plot of Gopher oats after fallow.

The harvesting of replicated field plots of small grain is completed except for late varieties of wheat, flax, and proso. The nursery harvest was completed today with the exception of plant rows in the smut nursery.

Sorghum and corn varieties are making rapid development during this hot weather. The earliest variety of the former (Dwarf Freed x Dwarf Feterita (151-4-6)) began heading July 31, 66 days after sowing. Both crops are badly in need of rain.

The total precipitation for July was 2.19 inches, including 0.26 inch on the night of the 31st. Most of this rain fell during the first week of July.

Official visitors during the latter half of July were Messrs. J. A. Clark, F. A. Coffman, H. C. Murphy, Wm. J. Leary, and O. S. Fisher.

The threshing of cereal varieties will begin in a day or two, if weather permits.

OREGON

SHERMAN BRANCH EXPERIMENT STATION, MORO (Cereal Agronomy, M. M. Oveson)
[Aug. 7]

The last week in July was extremely hot with the temperature reaching a high of 111° on July 27. This is the highest ever recorded at this Station. Both winter and spring grains were ripe so no damage to the cereals resulted. The extremely hot weather and low humidity increased the fire hazard throughout the area. Several fires were started in wheat fields from trucks and tractors but were put out before much damage was done.

The grain crops at the Station have all been harvested and the 1939 yields of the winter and spring wheat varieties are shown in the following tables.

Average yield of winter wheat varieties grown in quadruplicate 1/26-acre plots at the Sherman Branch Experiment Station, Moro, Oreg., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)
Federation	4734	37.9
Fortyfold x Federation	11693	37.3
Blackhull	6251	36.7
Rex selection M ₁	11689	36.2
Kanred x Hard Federation	10092	36.0
Cheyenne	8835	35.3
Hybrid 128 x Fortyfold	11755	35.3
Triplet	5408	34.6
Turkey selection	11424	34.1
Hybrid 128	4512	33.9
Golden	10063	33.7
Hymar	11605	33.6
Kharkof	1442	33.6
Oro	8220	32.9
Rio	10061	32.5
Relief	10082	32.0
Turkey selection	11425	31.3
Ridit	6703	30.0
Average		34.2

Average yield of spring wheat varieties grown in quadruplicate 1/26-acre plots at the Sherman Branch Experiment Station, Moro, Oreg., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)
Federation x Bunyip	11874	28.9
Federation	4734	26.5
Baart x Hard Federation	11615	26.4
Onas	6221	25.6
White Federation	4981	25.0
Idaed	11706	24.9
Hard Federation 71	8256	24.8
Hard Federation 31	8255	24.6
Pacific Bluestem	4067	24.2
Marquis	4158	21.6
Baart	1697	21.3
Average		24.9

AGRICULTURAL EXPERIMENT STATION, CORVALLIS (Foot Rots of Wheat, Roderick Sprague) (Aug. 2)

There was very little foot rot and less low smut in the plots on High Prairie this year. The grain on the Prairie was suffering from drought in June but a few late rains were of material benefit, particularly to the Holland variety, which will produce about 90 percent of a normal crop. Rex did not benefit from the rains but Hyمار looked better. In the Goldendale, Washington, area Rex is becoming popular and appears to yield well. Olympia barley yielded heavily even in eastern Klickitat County, Washington. It will probably replace other winter barleys in the Columbia Gorge area. In the plots on High Prairie it was again outstanding. Santiam yielded more than the winter clubs but less than Olympia, had weak straw, and was less winter hardy.

Counts on smut were made in the seed treatment plots in late June at Moro, Condon, and Pendleton and in early July at High Prairie. The grain near Condon was spotted, but near the town it was not suffering from drought and gave indications of good yield, particularly in fields of Rex. In some fields, the grain had very poor root systems. Recent newspaper reports indicated heavy hail loss in Gilliam County, one report stating that 50,000 acres were injured with damage of 75 percent on 600 to 1,000 acres in one region.

Grain in the Willamette Valley, particularly spring grain which had suffered earlier from drought, improved in the latter part of the season. The weather during late July was hot and dry. A maximum of 104° was reported at Corvallis.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (Aug. 2)

A large part of the small grains was harvested in July but threshing operations have not begun. June was relatively cool and there were occasional showers, but July has been clear and hot, causing a serious water shortage. Irrigated crops have suffered somewhat but, in general, small grains are good. Winter wheat is generally thin, promising low yields although occasional areas report good crops.

Almost no smut in winter wheat has been observed or reported over the State. In spring grains, black stem rust is becoming serious in some counties, although only small infestations have been seen on the Experimental Farm.

A severe drought from June 20 to July 31 has forced the ripening of all small grains. It has been possible to harvest both winter and spring grains at the same time. Wheat, oats, and barley have ripened so nearly at the same time that outlying nurseries could be harvested at one time.

Partly as a result of hot, dry weather, lodging has been less serious than usual.

Corn grew extremely well in July but 2 or 3 good irrigations were required.

The mean temperature for July was 70° , which is slightly below normal. A maximum temperature of 98° was recorded on July 13, while on 19 days temperatures were above 90° . Evaporation was considerably below normal.

A rain occurred on the 31st, totaling 0.6 inch at the Experimental Farm and varying from light showers to floods in various parts of Cache Valley and other parts of the State.

CALIFORNIA

BIGGS RICE FIELD STATION, BIGGS (Rice Agronomy, L. L. Davis) (Aug. 1)

Weather conditions were nearly normal in the Sacramento Valley during June and July. The rice crop is developing rapidly, and it appears at this date that harvesting of the Caloro variety will start about September 25. This is about 15 days earlier than normal. Rice was seeded about 15 days earlier than usual last spring.

Early varieties are well headed at this date, and Caloro is beginning to head on a few early-seeded fields. In general, the California rice crop does not appear to be so good as normal. Poor rice stands and very weedy fields are general throughout this section.

Work was started last week on the construction of a \$40,000 rice drier at Richvale, two miles from the Rice Station. This will be the largest rice drier in California and perhaps in the world. It will have a daily capacity of 13,000 bushels of rice having a moisture content of 22 percent. Rice will be dried to about 14 percent before it is stored.

Mr. Jenkin W. Jones and family visited the Station on July 11.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 31

August 25, 1939

No. 13

Personnel (Aug. 11 - 25) and Field Station (Aug. 1 - 15)

PERSONNEL ITEMS

Dr. Charlotte Elliott, Dr. H. B. Humphrey, and Mr. H. H. McKinney have been authorized to attend the meetings of the Third International Congress for Microbiology to be held in New York City September 2 to 9.

Mr. Jenkin W. Jones left Washington August 16 for his annual trip to the rice-producing sections of Louisiana, Texas, Arkansas, California, and Missouri. He will study cooperative experiments with rice, make selections and crosses, and study hybrid material. He will be in the field until about October 1.

Dr. John H. Martin left Washington on August 23 to visit the sorghum-producing States of Oklahoma, Texas, New Mexico, Kansas, Nebraska, Colorado, Wyoming, South Dakota, and Illinois, where he will conduct breeding experiments with sorghum and confer with Division personnel and officials of co-operating State agricultural experiment stations regarding sorghum research.

RECENT PUBLICATIONS

A. L. Bakke, W. G. Gaessler, and W. E. Loomis. Relation of Root Reserves to Control of European Bindweed Convolvulus arvensis L. Iowa Agr. Expt. Sta. Res. Bul. 254: [114]-144, figs. 1-7. May 1939. (Project 484 of the Iowa Agricultural Experiment Station in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.)

E. R. Sears. Cytogenetic Studies with Polyploid Species of Wheat. I. Chromosomal Aberrations in the Progeny of a Haploid of Triticum vulgare. Genetics 34: 509-523. July 1939. (Cooperation between the Division of Cereal Crops and Diseases and the Department of Field Crops, Missouri Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

VIRGINIA

ARLINGTON EXPERIMENT FARM, ARLINGTON (Small Grain Agronomy, J. W. Taylor) (Aug. 15)

Yields of fall-sown cereals were average or below for 1939. The winter was exceptionally mild, resulting in little winter injury. Even wheat, oats, barley, and rye varieties having very little winter hardiness came through in excellent shape. Leaf rust was severe though late in getting under way and the infection of loose smut in both wheat and barley was unusually heavy. However, the dry weather in May was no doubt most unfavorable to the small grains. The period between flowering and ripening was curtailed approximately one week. Only 0.46 inch of rain fell, as compared to an average of 3.73 inches.

Acre yield of fall-sown wheat varieties grown in triplicate 1/40-acre plots at the Arlington Experiment Farm, 1939.

Variety	C. I. No.	Yield (Bu. per acre)	Percentage of Purplestraw (Check plots)
Early Fulcaster	2008-1	27.6	105
Fultz	1923	28.4	101
Red Wonder	5780	25.9	98
Gasta	11398	25.6	98
Leap	4823	25.6	97
Poolc	1379	25.3	96
Dixie	10070	25.2	95
Wharten	10071	24.8	94
Mammoth Red	2008	25.6	91
Dietz	1981	22.9	87
V.P.I. 131	10047	22.8	87
Nittany	6882	21.7	83
Shepherd	6163	21.7	82
Fulcaster	1945	22.6	80
Trumbull	5657	20.0	75
T 47-55	----	19.7	75
Missouri Bluestem	1912	18.9	71
Arlando	10069	18.2	69
Leapland	11762	17.9	64
Forward	6691	16.0	60
Purplestraw 1/	1915	26.3	--

1/Average of 18 check plots.

Acre yield of fall-sown wheat grown in duplicate 1/80-acre plots
for the uniform nurseries, Arlington Experiment Farm, 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Nittany	6882	33.0
Leap	4823	30.9
Purplestraw	1915	28.0 <u>1/</u>
Canawa	11854	26.9
Red Rock	6951	24.4
Trumbull	5657	23.6
Forward	6691	21.0
Gladden	5644	20.4
Purkof	8381	19.2
Michigan Amber	5620	18.2
Mediterranean selection	11567	18.0
Early Premium	11858	17.9
Illinois No. 2	11537	17.7
Purdue No. 1	11380	17.5
Yorkwin	11855	17.3
Clarkan	8858	16.5
Currell	3326	15.7
Brill	11853	15.7
Fulcaster	6471	15.4
Kharkof	1442	14.7
Baldrock	11538	14.7
Wisconsin Pedigree 2	6683	13.8
Thorine	11856	12.8
American Banner	6943	12.8
Purdue No. 4	11932	12.2
Kawvale	8180	12.2
Valprize	11539	11.4
Junior No. 6	6971	10.3
Minturki	6155	7.6

1/ Single plot only.

Acre yield of fall-sown barley grown in triplicate 1/80-acre plots at the Arlington Experiment Farm, 1939.

Variety	C. I. No.	Yield (Bu. per acre)	Percentage of Wisconsin Winter (Check plots)
Nakano Wase 68	6272	53.8	121
Nakano Wase 45	----	53.1	119
Esaw	4690	43.6	116
Smooth Awn 86	6268	48.3	112
Woods (hooded)	6235	49.6	111
Hooded 16	----	43.0	109
Tennessee Winter (Va.)	6034	40.6	108
Beardless 6	2746	40.1	107
Tennessee Winter	257	37.4	102
Han River	2163	36.9	101
Tennessee Winter	3534	34.4	95
Composite Cross (winter)	5530	34.4	95
Marnobarb	----	40.5	94
Tennessee Winter 66	3546	34.9	93
Alaska	4106	34.2	93
Orel	351	33.4	91
Mechanical Mixture	4115	33.0	90
Composite Cross (old)	4116	32.6	90
Poland	6280	35.0	89
Kentucky Smooth Awn 11	6021	38.1	88
Tennessee Winter x Smooth Awn	----	34.4	87
Hooded 11	----	29.2	74
Smooth Awn 203	6267	26.6	62
Wisconsin Winter 1/	2159	39.3	--

1/ Average of 23 check plots.

Acre yield of fall-sown oat varieties grown in duplicate 1/40-acre plots at the Arlington Experiment Farm, 1939.

Variety	C. I. No.	Yield (Bu. per acre)	Percentage of Lee (Check plots)
Fulghum selection 699-202	2498	78.2	109
Fulghum	708	77.9	109
Fulghum selection 699-2011	2499	73.2	102
Custis	2041	72.4	101
Tennessee selection 1945	3168	71.1	100
Winter Turf	431	67.1	94
Culberson	273	67.5	94
Randolph	2275	66.5	93
Coker 32-1	3026	64.8	90
Winter Turf	541-4	61.2	86
Lee 1/	2042	71.3	--

1/ Average of 8 check plots.

Acre yield of rye varieties grown in 1/40-acre plots at the Arlington Experiment Farm, 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Balbo	256	47.9
Dakold	175	46.4
Prolific	258	45.4
Rimpau	126	39.3
Von Runker	173	38.4
Star	209	37.1
Imperial	255	36.2
Rosen	195	35.9
Blackpool	260	35.7
Abruzzi	40	32.4
Von Rümker	133	30.3
Smooth Neck	---	27.9
Double Chromosome	261	17.5

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Aug. 16)

Two showers kept the temperature down during the first half of August and allowed the sorghums to maintain development. More moisture is needed and crops will deteriorate if rains do not occur soon. Both sorghums and broomcorn are heading, and bagging heads for seed is the work at present.

A good rain would turn the project into average or better than average yields but without moisture the sorghums and broomcorn will produce light or no yields.

The best sorghum crops observed on a trip to Lawton, Okla., were already matured and mainly in shocks.

The maximum temperature for the first half of August was 102° on the 1st and the minimum was 55° on the 9th. The precipitation of 0.72 inch was recorded in two showers, one of 0.42 inch on the 7th and the second of 0.30 inch on the 13th and 14th.

COLORADO

AGRICULTURAL EXPERIMENT STATION, FORT COLLINS (Wheat Improvement, J. J. Curtis) (Aug. 15) (Akron Report)

The precipitation for this period amounted to 0.16 inch. The maximum temperature was 96° on August 3 and the minimum, 40° on August 8. A two-day period of comparatively cool weather occurred August 2 and 3.

The crops did not respond to a very great extent to the 0.78 inch of precipitation received on July 31. The sorghums on fallow seem to have benefited most. Nearly all of the millet and sorghum varieties are heading with the prospect of only a small yield if more precipitation occurs. The corn crop is a failure with the possible exception of the hybrid test, which seems to endure the drought better than the date-of-seeding and the seed-treatment test planted with Akron White and Akron Yellow corn.

Birds have damaged sorghum heads.

The wind velocity for this period has ranged from a minimum of 1.8 miles per hour on August 15 to a maximum of 7.3 miles per hour on August 10.

Mr. Rodney Tucker visited the Station on August 8. On August 12 the Station was visited by Dr. E. C. Auchter, Chief of the Bureau of Plant Industry, Dr. R. Bradfield of Cornell University, and Mr. H. M. Benedict of the Cheyenne Horticultural Field Station.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Aug. 16)

The drought conditions which prevailed during the last half of July were broken by a rainfall of 0.35 inch on August 7 and 1.02 inches on August 9. The total precipitation during the first half of August was 1.42 inches. The maximum temperature was 100° on the 6th and the minimum, 42° on the 8th.

Threshing of the wheat nursery was completed August 11. Most of the yields ranged between 30 and 40 bushels per acre, with a few over 40 and a few under 30. Most of the test weights ranged between 57 and 61 pounds per bushel, with a few testing as high as 63 pounds per bushel.

Threshing of the plots has been delayed on account of rain.

Early varieties of flax in both plots and nursery were harvested August 11. Many later maturing varieties still remain to be harvested.

Visitors included Messrs. J. A. Clark and A. C. Dillman.

AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE STATION, FARGO (Wheat Improvement, G. S. Smith) (Aug. 10)

Harvesting of common and durum wheat is practically completed in eastern North Dakota. Some threshing reports are in, and considerable combining has been done. The results are very spotty, some yields running up to 25 bushels per acre of good quality wheat, but much of it shriveled by drought and grasshoppers. A large acreage in the eastern third of North Dakota will yield less than 10 bushels per acre.

The nursery harvest at Fargo and Langdon is completed except for later sown hybrid material. At Fargo, yields will be fair and test weights satisfactory, but at Langdon both yields and test weights will be light because of hopper and drought injury. However, nearly everything was harvested at Langdon in the hope that the severe conditions would provide an opportunity for selection, as was the case in the drought year of 1936.

At Langdon, the grasshoppers have thinned out considerably, and late-sown hybrid material is remaining green and filling rather well despite absence of leaves and shortage of moisture. Satisfactory stem rust notes are being taken on late material.

MONTANA

AGRICULTURAL EXPERIMENT STATION, BOZEMAN (Wheat Improvement, R. H. Bamberg) (Aug. 15)

For the past month the weather over most of the State has been dry and hot except for a rather general rain of approximately one-half inch August 8 and 9. A few cool days with light frosts in some areas and freezing temperatures at higher elevations followed the rains.

Winter wheat harvest became rather general in the Judith Basin and Great Falls areas July 31 and August 1. Combining was started in the Gallatin Valley last week on dry-land farms.

At Bozeman, the station winter wheat plots were harvested August 11. Barley plots and nurseries as well as the earliest spring wheat nursery varieties are ready for harvesting now.

Many spring wheats are heavily infected with mildew but stripe rust, leaf rust, and stem rust are relatively scarce. A very light but rather general infection of leaf rust is evident, but stem rust is confined to a few infection centers.

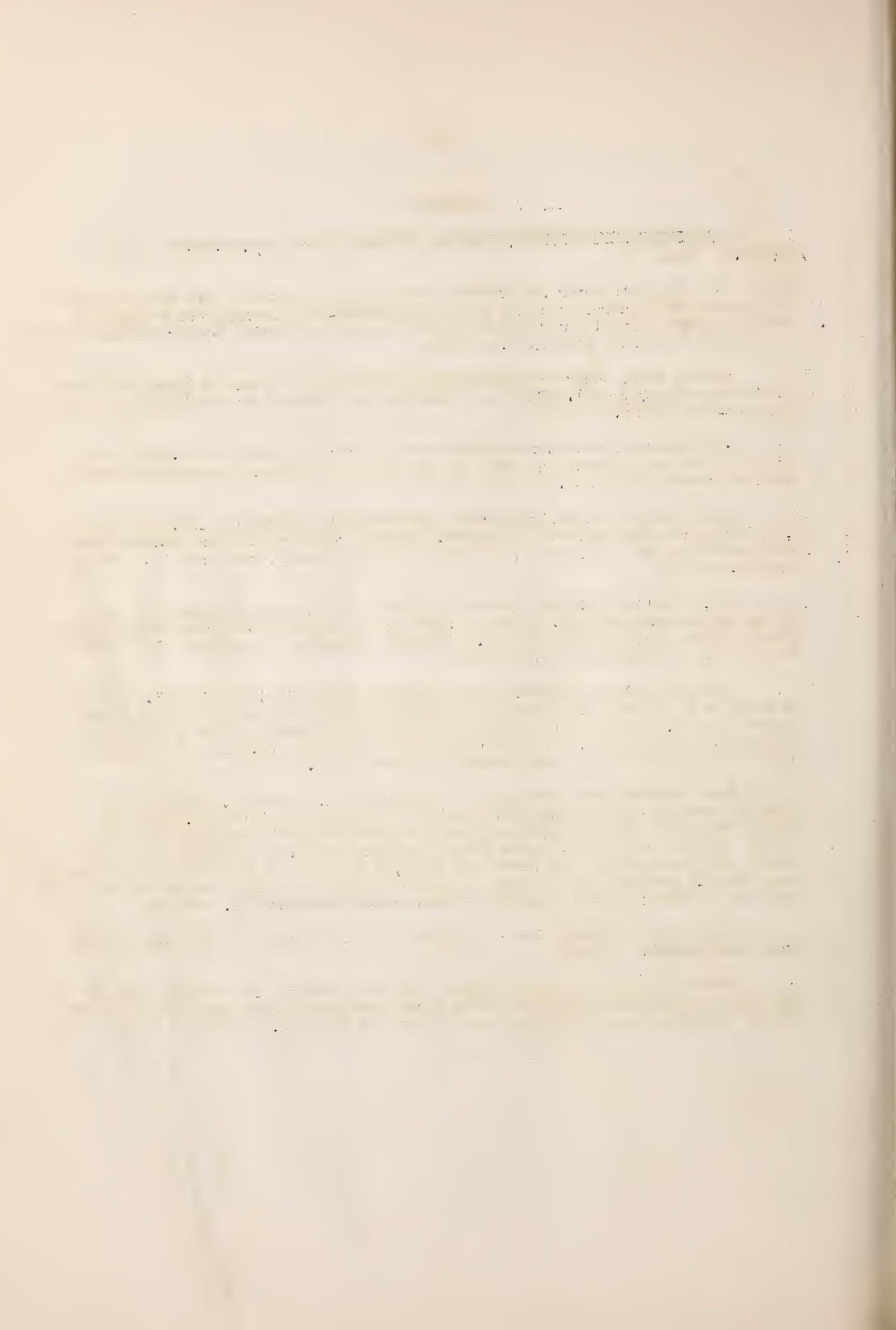
At Moccasin, excellent yields of winter wheat were obtained but all spring grains were damaged by heat. Most of the leaves were burned from spring wheats before they reached the dough stage. Indications are that yields will be very low and the grain very light.

Oats and barley suffered more than spring wheats from "crinkle joint". As high as 90 percent of the culms of some varieties of oats bent over a few inches from the ground, the heads remaining on the ground. Most of this type of damage occurred late in the afternoon of hot days about July 12. This hot period followed the cool damp weather of June and early July.

Some observations made on a trip through the eastern, northern, and central sections of the State from July 27 to August 2 may be of interest. Winter wheat yields appeared to be good and the grain was heavy in all sections. Spring wheats were badly burned in many sections, particularly in the extreme eastern part of the State and west of Havre, some threshed grain testing less than 45 pounds. Heat damage to spring wheat was general in the central part of the State though less severe than in the Havre-Shelby section.

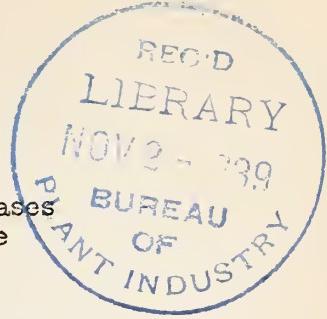
Some fields of oats south of Opheim in the northeast were down 50 percent with "crinkle joint".

Recent reports of severe damage from stem rust in the eastern part of the State are believed false, as only a few pustules of rust were found in any fields and those were in fields ready to cut in less than a week.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

September 10, 1939

No. 14

Personnel (Aug. 26 - Sept. 10) and Field Station (Aug. 16 - 31)

RECENT PUBLICATIONS

A. E. Longley and T. R. Stanton. Chromosome Number in Dwarf Oats.
(Note) Amer. Soc. Agron. Jour. 31(8): 733-735, figs. 1-2. August 1939.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau
B. P. I. Memo. 1055.

August 23, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

Dr. A. F. Woods, Director of the Graduate School of the Department of Agriculture, advises that the catalogue of the Graduate School is now available. Copies may be secured from Room No. 1031, South Building, or will be sent upon request, in writing, addressed to the Graduate School.

The following paragraphs are quoted from a letter dated August 21, from Dr. Woods:

"In a few cases the Graduate School has assisted groups located in the field stations to organize classes after official hours in subjects desired if suitable local instructors are available.

"It usually requires fifteen students to pay the cost of a two or three hour course of fifteen weeks given after office hours.

"If your field employees are interested, we shall be glad to hear from them."

You will no doubt wish to call this to the attention of members of your staff.

Very sincerely,

E. C. Auchter
Chief of Bureau.

TRANSLATIONS

In the Cereal Courier of May 10, 1939 (vol. 31, no. 6) appears a memorandum regarding the number of copies of translations to be submitted to the Division. For further help to those who make translations there is submitted herewith a copy of the article entitled "INDEX OF TRANSLATIONS," by the U. S. Department of Agriculture Library, in AGRICULTURAL LIBRARY NOTES Vol. 14, no. 7, July 1939.

"In connection with the Translation Exchange Service project initiated by the Interbureau Translation Committee of the Department of Agriculture, of which Dr. H. B. Humphrey, Bureau of Plant Industry, is chairman, the Library is maintaining a card record of translations received by the Library, both in processed and typewritten form, and also a record of film copies made from typewritten copies that have been lent to the Library for the most part by the State agricultural colleges and experiment stations who are cooperating in the translation project. The translations are also listed as received in Agricultural Library Notes. The purpose of the project is to make more generally available any translations that may be made in the fields of interest to the Department and the land-grant colleges and experiment stations. The cooperation of offices of the Department in Washington and in the field is earnestly requested in sending copies of their translations, and also the cooperation of the land-grant colleges and experiment stations. The cooperation of other institutions having translations in the fields of special interest to the Department would also be welcomed. In the preparation of the cards for the index, it would be helpful if the translations would in all cases give the following information:

If a book: The author, the foreign and translated titles, the publisher, and date.

If a chapter from a book: The author, the foreign and translated titles of the book and of the chapter translated, the inclusive pages, the publisher, and date.

If a periodical article: The author, the foreign and translated titles of the article, the name of the periodical, the volume, number, inclusive pages, and date.

"Following are examples illustrating the form to be followed in each case:

LIESEGANG, R. E. Kolloid-fibel für mediziner (Colloid primer for students in medicine). Dresden, T. Steinkopf, 1936. Translated by K. Goering and Louis DeVries.

BAUER, K. H. Chemische technologie der fette und öle. III. Die einzelnen bestandteils der fette und öle (Chemical technology of fats and oils). III. The individual constituents of fats and oils). p. 44-79. Berlin, Paul Parey, 1928. Translated by F. W. Hoyt and Louis DeVries.

CHOUARD, P. Chaleur, lumiere et radiations. Principes de leur action sur les plantes. II. L'eclairage; ses divers modes; action des diverses radiations sur les plantes (Heat, light and irradiations. Principles of their action on plants. II. Lighting; its various modes; action of various irradiations on plants). Rev. Hort. n. s. 25(1): 17-26. Jan. 1936. Translated by J. B. Wingert and Louis DeVries.

"In the case of a Russian, Chinese, or Japanese article, the transliterated title, in addition to the translated title, is desired."

A.H.B.K.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

RICE BRANCH STATION, STUTTGART (Rice and Oat Production and Improvement, C. R. Adair) (Sept. 1)

The rice harvest on commercial fields started about August 24. This is probably a week earlier than usual. Several fields of Lady Wright and Early Prolific have been cut at this time. The harvest of Early Prolific will be in full swing next week. A few early sown plots have been harvested on the Station.

The quality of the rice appears to be good. A sample of Early Prolific was milled and there seemed to be very little chalkyness. This condition is rather to be expected, as the temperatures have been comparatively uniform and not extremely high. The highest temperature in August was 98° on the 12th and the lowest, 59° on the 29th. The mean daily temperature for August was 80.9°, which is 1 degree lower than the 10-year average. The total precipitation for August was 0.98 inch, while the 10-year average precipitation for August is 1.84 inches.

Helminthosporium and Cercospora leaf spots and "white tip" have been quite prevalent this year. These diseases probably are the main causes of what apparently will be a poor crop of Blue Rose. Early Prolific, Lady Wright, and Nira, however, will apparently yield about a normal crop.

Late-planted corn and soybeans have suffered during the dry weather this past month. The rainfall was excessive in late June and the first part of July, so that a large acreage of soybeans and some corn was sown after that time. Neither of these crops, which were sown late, will make normal yields. Early planted corn and soybeans, however, should make good yields this year.

A few fields of winter oats have been sown for use as pasture.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (Sept. 5)

The maximum temperature in August was 108°, and the minimum 66°. The mean temperature was 85.8°, or 1.7° above normal. The precipitation for the period was 2.04 inches, which is 0.49 inch below normal. Since September 1 all-time records for September weather have been broken with a maximum of 110.5° and 5 days above the previous all-time record of 106° for September. Hot winds accompanied these unusual temperatures, which have been exceeded only once in any month in the history of the Station.

Although the August rainfall was nearly normal, no general rains have occurred and seedbeds are being prepared with difficulty because the July rainfall was low. The work of cleaning grain and threshing plant selections was completed. Seeding plans for fall-sown grain are well under way and the annual report is almost completed.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Sept. 1)

The last half of August was hotter and drier than the first half. Most sorghums and broomcorns are heading but are also wilting badly during the day. Broomcorn plots of the date-varietal experiments were harvested August 18 and September 1; the brush yields will be light and of medium to poor quality.

Dr. J. H. Martin inspected the project on the 21st and 22d.

The maximum temperature for the last half of August was 105° on the 29th and the minimum, 54° on the 21st and 23d. The temperature was 100° or higher on each day after the 24th. The precipitation was 0.13 inch on the 18th; the total for the month was 0.85 inch.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Sept. 2)

The weather during the last half of August was generally dry but almost continuously favorable for field work. The maximum temperature was 101° and the minimum 43°. The precipitation was 0.77 inch.

Threshing of the wheat, oat, barley, and flax varietal plots and the regular flax nursery is completed.

Acre yields from the wheat varietal plots are presented in the following table.

Average acre yields of wheat varieties grown in 66th-acre plots at Mandan, N. Dak., 1939.

Variety	C. I. No.	Nursery No.	Yield (Bu. per acre)
<u>Hard Red Spring</u>			
Hope x Hard Federation	11798	1268	21.6
Vesta	11712	Ns. 2592	20.4
C.-D.C. x C.-H.F. 1/	11939	Ns. 2742	20.0
C.-D.C. x C.-H.F. 1/	11941	Ns. 2744	19.9
Pilot - 13	11945	1098-13	19.7
Merit	11870	1348	19.6
C.-D.C. x C.-H.F. 1/	11894	Ns. 2746	19.5
Thatcher	10003	---	19.4
Mercury	11872	Ns. 2740	19.4
H-44 x Ceres	11883	1344	19.4
Pilot - B	11428	1098-B	19.3
H-44 x Ceres	11882	1349	18.9
Premier	11940	Ns. 2772	18.9
Ceres	6900	---	18.9
Rival	11708	Ns. 2634	18.7
Renown (new)	11947	R.L. 716.6	18.4
Marquis	3641	---	17.6
Renown (old)	11709	R.L. 716	17.4
Apex	11636	---	17.4
Great Northern	11937	---	17.2
"Nordhaugen"	11801	---	16.0

Durum

Kubanka	1440	---	18.6
Mindum	5296	---	17.0
N. No. 1131 x Pilot	11948	1441	16.6

1/ Ceres-Double Cross x Ceres-Hope-Florence.

19) DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Aug.

The threshing of cereal field plots was completed on August 17 after being interrupted by rainy weather. Nursery varieties of winter wheat, oats, and barley have been threshed and the spring wheat nursery is partly threshed. Yields from replicated field plots of wheat, oats, and barley are presented below. Yields of winter wheat are averages from two 1/40-acre plots protected in winter by standing cornstalks. Yields of spring wheat, oats, and barley are averages from four 1/57.6-acre plots, 2 of each on fallow and 2 on corn-land. The three durum varieties and five varieties of barley were grown only on fallow with two plots of each. Rabbits injured one replication of barley so that the yields given for the remaining four varieties are from only one plot each.

The precipitation for August to date is 2.49 inches, including a shower on the evening of July 31. The total for 1939 to date is 14.96 inches, which is nearly the normal precipitation for the entire year.

Acre yield of winter wheat varieties grown in standing cornstalks on two 1/40-acre plots at the Dickinson Substation, 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Minnesota 2614	----	18.9
Minnesota 2313	----	17.8
Minturki	6155	16.2
Nebred	10094	16.2
Yogo	8033	15.6
Kharkof	1442	14.3
Turkey	----	14.0
Beloglina	1667	12.0
Karmont	6700	11.7
Nebraska No. 60	6250	11.2

Acre yield of spring wheat varieties in four 1/57.6-acre plots (2 on fallow and 2 on cornland) at the Dickinson Substation, 1939.

Variety	C. I. No.	Nursery No.	Yield (Bu. per acre)
C.-D.C. x C.-H.F. 1/	11941	Ns. 2744	29.6
Do	11939	Ns. 2742	29.3
Premier	11940	Ns. 2772	28.1
Pilot-13	11945	1098-13	27.5
Mercury	11872	Ns. 2740	27.3
C.-D.C. x C.-H.F. 1/	11894	Ns. 2746	27.2
H-44 x Ceres	11883	1344	27.2
Merit	11870	1348	26.8
Thatcher	10003	----	26.8
Comet x N. No. 1110	11931	1466	26.5
Pilot-B	11428	1098-B	26.1
Vesta	11712	Ns. 2592	26.0
Carleeds	11801	----	25.8
Rival	11708	Ns. 2634	25.6
Apex	11636	----	23.2
N. No. 1131 x Pilot	11948	1441	23.2
Renown (old)	11709	R.L. 716	22.2
Renown (new)	11947	R.L. 716.6	21.5
Ceres	6900	----	21.2
Marquis	3641	----	19.9
Red Fife	3329	----	17.0
Haynes	5278	----	16.5
<u>Durum 2/</u>			
Kubanka	1440	----	26.0
Mindum	5296	----	22.4
Pentad	3322	----	21.0

1/ Ceres-Double Cross x Ceres-Hope-Florence.

2/ Averages for 2 plots on fallow.

Acre yield of spring oat varieties grown in four 1/57.6-acre plots (2 on fallow and 2 on cornland) at the Dickinson Substation, 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Richland Selection 52	3008	76.7
Gopher	2027	74.7
Logold	2329	72.9
Carleton	2378	71.7
Kherson	459	64.8
Rainbow	2345	64.1
Bannock	2592	62.6
Markton	2053	61.6
Boone	3305	61.4
Markton x Idamaine	2571	58.6
-----	335 (?)	58.3
Rusota	2343	54.5
Silvermine x Markton	2999	49.7
Markton x Victory	2954	47.9
Victory	560	46.3
Swedish Select	134	45.2
Anthony	2143	44.7

Acre yield of spring barley varieties grown in four 1/57.6-acre plots (2 on fallow and 2 on cornland) at the Dickinson Substation, 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Trebi	936	48.2 1/
N. Dak. No. 2753	6359	47.4 1/
N. Dak. No. 2752	6358	46.4
Spartan	5027	43.6
Steigum	907	42.5
Hannchen	531	41.6
Ezond	6265	40.6
Horn	926	40.4
Glabron	4577	28.6
Velvet	4252	22.7 1/
Odessa	182	38.6 2/
Colsess	2792	37.9 2/
Manchuria	244	37.4 2/
Wisconsin Pedigree 38	5105	36.0 2/

1/ Yield adjusted for missing rows.

2/ Yield from 1 plot on fallow.

(Sept. 1)

Although the precipitation for August has been 2.49 inches, which is considerably above normal, most of the rain occurred early in the month. The latter part has been hot and dry and all growing crops are in need of moisture.

The winter wheat nursery emerged promptly after seeding early in August and is in good condition. Corn varieties are nearly mature except the dent varieties. Early sorghum varieties are developing seed while the latest varieties, Waconia and Early Sumac, are just beginning to head.

Threshing of small grains at the Substation is all completed and most of the seed is cleaned ready for storage.

Yields and test weights from the Uniform Regional Spring Wheat Nursery at the Dickinson Substation, 1939.

Variety or cross	C. I. No.	Nursery No.	Av. yield (Bu. per acre)	Test weight (Lbs. per bu.)
Pilot - 13	11945	1098-13	36.7	55.0
H-44 x Double Cross	11892	II-28-27	35.4	55.0
H-44 x Thatcher	11889	II-28-49	35.1	57.0
Do	11890	II-28-52	34.7	53.0
C.-D.C. x C.-H.F. 1/	11941	Ns. 2744	34.5	57.0
Do	12008	Ns. 2829	33.4	57.5
Do	12005	Ns. 2797	32.9	53.5
H-44 x Thatcher	11791	II-28-61	32.7	56.5
Thatcher	10003	-----	32.4	53.0
H-44 x Ceres	11883	1344-B	32.1	55.5
Comet x Pilot	11930	1465	32.1	55.5
C.-D.C. x C.-H.F. 1/	12007	Ns. 2809	32.0	56.5
H-44 x Thatcher	11898	II-29-60	31.9	55.0
C.-D.C. x C.-H.F. 1/	12006	Ns. 2800	31.2	53.5
H-44 x Marquis	11781	1517	31.1	57.0
Comet x N. No. 1110	11931	1466	31.1	57.0
Comet-N. No. 1110 x H-44-Ceres	11949	1448	30.9	53.0
Reliance-Hope x Reward	12009	----	30.7	61.5
H-44 x Marquis	11887	R.L. 704.1	30.5	53.5
H-44-Ceres x Marquis	11929	1464	30.2	54.0
Hope x Ceres	11897	S.D.1463	28.6	55.5
N. No. 1131. x Pilot	11948	1441	27.9	56.5
Regent	11869	R.L. 975.1	27.7	53.5
Ceres x H-44	11882	1349	26.9	53.5
Reliance x Hope	11934	1139-22	22.2	53.0
Marquis	3641	----	20.1	53.5
Average			31.0	

1/ Ceres-Double Cross x Ceres-Hope-Florence.

Yields and test weights of wheat varieties from the Intra-State Nursery at the Dickinson Substation, 1939.

Variety or cross	Nursery No.	Av. yield (Bu. per acre)	Test weight (Lbs. per bu.)
C.-D.C. x C.-H.F. 1/	2903	33.9	54.5
Do	2858	31.5	56.8
Thatcher	----	31.1	54.3
Comet x Pilot	1540	31.0	56.3
C.-D.C. x C.-H.F. 1/	2847	30.5	55.5
Ceres x Pilot	1552	30.1	52.8
C.-D.C. x C.-H.F. 1/	2901	29.5	53.5
Ceres x Hope-Ridit	1534	28.2	55.5
Pilot selection 59	1098-59	28.0	54.3
1127 x Hard Federation-Martin	1549	27.8	55.5
H-44 x Ceres	1342-24	27.5	56.8
C.-D.C. x C.-H.F. 1/	2840	27.3	54.3
H-44 x Ceres	1344-6-1	26.9	56.5
C.-D.C. x C.-H.F. 1/	2900	26.0	54.5
Mercury x (Merc.-1383)	2822	26.0	54.3
C.-D.C. x C.-H.F. 1/	2899	25.9	55.3
Do	2902	25.8	52.5
Comet x Pilot	1541	24.9	55.5
C.-D.C. x C.-H.F. 1/	2898	24.6	57.8
Hope x Supreme	1543	23.4	53.5
H-44 x Reliance	1459	22.3	52.5
Ceres x Hope-G334	1548	21.8	52.5
Hope x Reward	1551	21.2	54.0
H-44 x Ceres	1349-15	21.2	53.5
Supreme x H-44	1440	18.9	53.0
Power x Hope	1426	17.1	56.5
Average		26.2	

1/ Ceres-Double Cross x Ceres-Hope-Florence.

OREGON

PENDLETON FIELD STATION, PENDLETON (Cereal Agronomy, J. F. Martin)
(Sept. 1)

The season of 1939 was characterized by a shortage of moisture during April, May, and June and by unusually warm weather in May, but with lower than normal temperatures in June. The hot weather in May caught much of the winter wheat at the flowering period, so that considerable sterility was evident. However, the cool June temperatures allowed wheat to fill well. Although neither winter nor spring wheat was firmly rooted, there was little evidence of lodging in commercial fields.

A precipitation of 0.33 inch on July 3 helped spring grains to fill, but it came too late to be of value to winter wheat. There were 7 days in July with maximum temperatures of 100° or more, but most grain was too near maturity to be materially damaged.

Yields of wheat in the vicinity of the Station were below normal, but in many sections of eastern Oregon the crop was better than average. Yields in the winter wheat nursery averaged nearly 10 bushels higher than the yields of the same varieties in field plots. This can be accounted for by the fact that the nursery varieties emerged more than a month before the varieties in field plots and were at a slightly different stage of growth during unfavorable weather in May.

More than 6,500 winter and spring wheat selections were grown in 1939, and some of them show promise as commercial varieties.

Yields of winter and spring wheats, spring barleys, and oats grown in field plots are given in the following tables.

Yields and weights per bushel of winter wheat varieties grown in 4 series of 53d-acre plots at the Pendleton Field Station, 1939.

[Sown Nov. 2, 1938]

Variety	C. I. No.	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
Federation	4734	39.6	60.0
Jenkin	5177	36.1	60.6
Hymar	11605	36.1	61.5
Rex selection M.1	11689	35.6	60.8
Fortyfold x Federation	11693	35.0	58.7
Golden	10063	34.5	58.0
Rex selection M.2	11690	34.0	60.0
Hybrid 128	4512	33.0	60.5
Albit	8275	32.6	60.0
Triplet	5408	32.6	60.5
Rio	10061	32.1	61.8
Kharkof	1442	29.2	61.0
Oro	8220	28.8	61.8
Ridit	6703	26.5	59.3

Yields and weights per bushel of spring wheat varieties grown in 4 series of 53d-acre plots at the Pendleton Field Station, 1939.

Variety	C. I. No.	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
Onas	6221	37.1	59.0
Federation x Bunyip selection 49	----	36.9	58.0
Federation x Bunyip selection 41	11874	36.7	59.0
Idaed	11706	36.7	59.8
White Federation	4981	36.7	60.5
Federation	4734	35.4	58.5
Hard Federation 31	8255	29.4	60.8
Marquis	4158	29.2	60.3
Baart	1697	28.5	62.0

Yields and weights per bushel of spring barley varieties grown in 4 series of 53d-acre plots at the Pendleton Field Station, 1939.

Variety	C. I. No.	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
Atlas	4118	64.0	43.0
Flynn selection 37	5918	63.6	42.8
Flynn selection 1	5911	61.6	42.8
Trebi	936	59.6	46.2
Meloy selection 3	4656	46.7	40.8
Composite Cross selection	5449	45.3	37.2

Yields and weights per bushel of oat varieties grown in 4 series of 53d-acre plots at the Pendleton Field Station, 1939.

Variety :	C. I. No.	Yield (Bu. per acre)	Test weight (Lbs. per bu.)
Carleton	2378	74.5	35.7
Markton x Ligowa	3025	74.2	40.0
Markton x Scottish Chief	3022	71.9	35.7
Markton x Swedish Select	3013	70.6	37.0
Sixty-Day x Markton	2352	69.6	37.0
Markton x Idamine	2570	68.1	37.0
Markton x Victory	2591	64.6	39.5
Markton	2053	63.8	36.0

UTAH

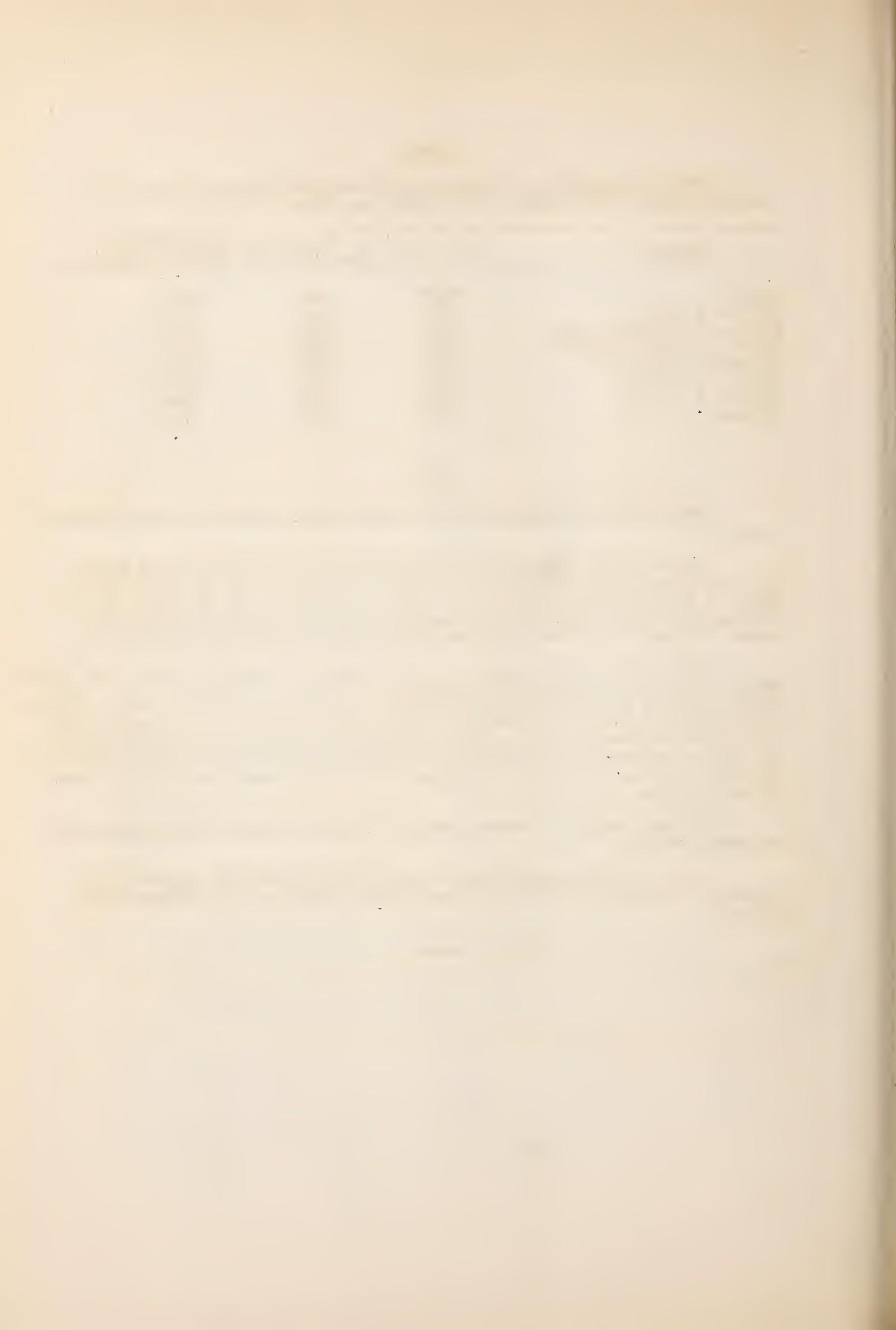
AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward)
(Sept. 1)

Harvesting and threshing of small grains was completed during August, the weather conditions being ideal. Yields of winter wheat were fair in some parts of the State and very low in others. Many farmers in the Nephi areas as well as in Sevier County suffered complete losses of winter wheat owing to summer frosts. Seldom has a similar condition been reported in those areas.

Spring grains on the Experiment Farm gave good yields. Some of the barley strains yielded in excess of 100 bushels to the acre, the highest being strains from a cross of Sacramento x Wisconsin Pedigree 38. In the spring wheat nursery yields ranged from 50 to 86 bushels to the acre. Very little rust was present in the nurseries and strains of Hard Federation x Dicklow were again among the higher producers. Oat varieties and strains ranged in yield from 120 to 160 bushels to the acre. Yields in 1/40-acre plot tests were comparable to those of the nursery.

Uniformly dry, hot weather prevailed throughout August with practically no precipitation.

Corn on the Experiment Farm is badly infested with red spiders and earworms. Beetles (adults of the common white grub) have also damaged ears of corn.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 31

September 25, 1939

No. 15

Personnel (Sept. 11 - 25) and Field Station (Sept. 1 - 15)

PERSONNEL ITEMS

Dr. M. A. McCall, Dr. S. C. Salmon, and Dr. B. B. Bayles were at Wooster, Ohio, September 21 and 22 for a conference with Dr. V. H. Morris and members of the staff of the Ohio Agricultural Experiment Station regarding the cooperative wheat quality program that is being conducted at the Federal Soft Wheat Laboratory. Plans were outlined for handling the program for the ensuing year.

Dr. Morris has recently been placed in charge of the Laboratory, succeeding Dr. E. G. Bayfield, who resigned to become head of the Department of Milling Industry of the Kansas State College of Agriculture and Applied Science, Manhattan, Kans.

RECENT PUBLICATIONS

✓ Franklin A. Coffman. Heat Resistance in Oat Varieties. Amer. Soc. Agron. Jour. 31(9): 811-817. September 1939.

✓ H. C. Murphy. Effect of Crown and Stem Rusts on the Relative Cold Resistance of Varieties and Selections of Oats. Phytopathology 29(9): 763-782, figs. 1-4. September 1939. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Botany and Plant Pathology Section of the Iowa Agricultural Experiment Station.)

✓ K. S. Quisenberry and B. B. Bayles. Growth Habit of Some Winter Wheat Varieties and Its Relation to Winterhardiness and Earliness. Amer. Soc. Agron. Jour. 31(9): 785-789, fig. 1. September 1939.

✓ Ralph W. Smith. Grasshopper Injury in Relation to Stem Rust in Spring Wheat Varieties. Amer. Soc. Agron. Jour. 31(9): 818-821. September 1939. (Contribution from the Division of Cereal Crops and Diseases and the North Dakota Agricultural Experiment Station.)

✓ J. W. Taylor, B. B. Bayles, and Colburn C. Fifield. A Simple Measure of Kernel Hardness in Wheat. Amer. Soc. Agron. Jour. 31(9): 775-784, figs. 1-3. September 1939.

September 13, 1939

MEMORANDUM

Regulations of the General Accounting Office and of the Department of Agriculture require that records of the time actually covered by employment which is certified for payment of wages and salaries must be kept at the field stations, available for inspection at any time.

For that reason it becomes particularly necessary that the time records of all individuals employed on a part-time assistant basis be carefully kept, available for inspection at any time, and that the time recorded at least equals the time covered in pay rolls certified or duty status cards submitted. Since records are subject to inspection at any time without notice, each field man is especially instructed to see that his time records are carefully kept and are up to date and correct.

Time books for keeping these records are available and will be furnished upon request.

M. A. McCall
Principal Agronomist in Charge
and
Assistant Chief of Bureau.

AMERICAN SOCIETY OF AGRONOMY

Regardless of the dates established nationally or locally for the celebration of Thanksgiving Day, the announced dates for the annual meetings of the American Society of Agronomy and of the Soil Science Society of America will remain unchanged. The two societies will meet at the Hotel Roosevelt in New Orleans November 22, 23, and 24, according to official confirmation by the executive committee.

Copied from Amer. Soc. Agron. Jour.
31(9): 822. September 1939.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (Sept. 16)

Threshing of the small grains has been completed. The rod-row trials at the Morris and Crookston experiment stations were so poor they were not harvested. Yields of the 1/40-acre plots at these stations were very low, owing to the dry weather early in the season.

Winter wheat varieties in both field plots and rod-row trials were good and the quality of the seed is excellent.

The winter wheat rod-row nursery at Waseca was sown on September 6, and at University Farm September 7 to 9. Two days after seeding at the latter place there was a rainfall of 3.9 inches in a 24-hour period. The wheat at University Farm emerged with excellent stands.

The temperatures were exceptionally high on September 13, 14, and 15. The maximum temperature for the first half of the month was 96°, recorded on the 14th and 15th. The rainfall for this period was 4.26 inches, 3.9 inches being recorded on September 11.

Corn is being harvested at the station.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Sept. 16)

Preparations for the seeding of winter wheat are well under way on the Station and on farms, although it is doubtful if much wheat will be sown unless we receive rain. No appreciable rain has fallen in this area since July 22 and as a consequence wheatland is very dry. It is doubtful if wheat could be drilled deep enough to reach sufficient moisture for germination. A rate-and-date seeding made on September 15 is not expected to emerge unless rain comes.

September 5 was outstanding in that the maximum temperature on that day was only 99°, whereas maximum temperatures for the preceding 11 days had ranged from 102° to 108° and on the 5 days following September 5 the maximum temperatures were 100° to 102°. These high temperatures, coupled with continuous moderately high winds, have been very detrimental to row crops, pastures, trees, and shrubs.

The precipitation since January 1 totals 18.88 inches as compared with the 25-year station average of 19.05 inches. However, the rainfall for the past two months is nearly 2 inches short of the average.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Sept. 11)

Kansas continues to live up to its reputation for extremes. The first half of August was unusually cool and wet, but the last week was a period of blistering heat, without rain in most parts of the State. For the first 17 days of August a total of 6.24 inches of rain fell at Manhattan, making an excess of 2.36 inches for the month, although not a drop fell during the last 14 days. Temperatures during the rainy period were far below normal, reaching a minimum of 52° on August 21. Temperatures remained low until August 28, and fear was expressed that some of the sorghum crop might not mature seed owing to low night temperatures. High temperatures since that time have dispelled that fear and a good sorghum crop is in prospect.

The past 3 weeks of drought and high temperatures have severely damaged alfalfa, pastures, trees, and shrubbery. From a lush green growth of mid-August, all growing plants have deteriorated rapidly. Lawns and pastures are brown and nearly all vegetation has a wilted appearance.

Plowing for winter wheat has been completed in most localities and some sowing has been done in western counties, but even there most sowing has ceased awaiting rain. Seedbeds are in fair condition except for a shortage of moisture.

All seed from the 1939 rust nursery has been examined and selections have been made for sowing in the 1940 nursery. The land has been plowed but is rather cloddy, and no sowing will be done until rain comes and the seedbed can be worked into shape. Seed for the rust nursery and for sowing at other stations now is being packed.

Recent Station visitors were Messrs. F. A. Coffman, S. C. Salmon, and O. A. Vogel.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Sept. 16)

Moderate temperatures with cool nights and warm days prevailed during the first half of September. The maximum temperature was 91° and the minimum, 34°. The precipitation was 0.16 inch.

Harvesting of the safflower plots on September 14 completed the plot harvest for the season. Some flax in nursery rows still remains to be harvested.

Average acre yields and test weights from the oat, barley, and flax varietal plots are presented in the following tables.

Acre yield and test weight of 12 oat varieties grown in triplicate 1/66-acre plots at Mandan, N. Dak., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)	Test weight (Lbs. per bu.)
Markton	2053	46.8	35
Iogold	2329	46.8	33
Markton x Rainbow	----	45.0	35
Minrus	2144	44.9	33
Rainbow	2345	44.2	34
Victory	560	44.0	35
Morota	2344	44.0	34
Richland selection 52	3008	41.9	34
Rusota	2343	41.6	31
Gopher	2027	40.9	37
Anthony	2143	40.2	35
Sixty-Day	165	32.8	34

Acre yield and test weight of 11 barley varieties grown in triplicate 1/66-acre plots at Mandan, N. Dak., 1939.

Variety	C. I. No.	Av. yield (Bu. per acre)	Test weight (Lbs. per bu.)
Ezond	6265	25.6	43
Nursery selection 2753	6359	24.9	45
Trebi	936	23.5	45
Odessa	182	23.4	45
Horn	926	23.1	48
Steigum	907	22.7	49
Velvet	4252	22.1	47
Wisconsin Barbless (Pedigree 38)	5105	20.3	41
Nursery selection 2752	6358	19.5	47
Glabron	4577	19.3	47
Spartan	5027	16.3	49

Acre yield and test weight of flax varieties in triplicate 1/66-acre plots at Mandan, N. Dak., 1939.

Variety ^{1/}	C. I. No.	Av. yield (Bu. per acre)	Test weight (Lbs. per bu.)
Bison	389	6.4	53.5
Bolley Golden	644	5.8	53.5
Redwing	499	5.4	52.0
Redwing Natural Hybrid	899	5.3	52.5
Linota	244	5.3	53.0
Bison (Press drill)	389	5.1	52.7
Walsh	645	4.8	48.8
Buda selection	737	4.7	53.8
Hybrid 10-25-59-3	739	4.7	52.8
Buda	326	4.2	51.8
Smoky Golden	751	3.6	53.0
Rio	280	3.4	49.5
Argentine selection 1-25-70	764	3.2	49.5
Natural Hybrid of C.I. 161	820	2.9	51.5
Selection of C.I. 385	897	2.6	51.3

^{1/} All plots sown with chain attachment on drill for covering seed except a series of Bison plots for which a press wheel attachment on drill was used in seeding.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Sept. 15)

Dry weather and rather high temperatures have prevailed during most of the period from September 1 to 15. The maximum temperature was above 90° on several days, the highest being 95° on the 11th. The first frost occurred on the morning of the 10th, with a minimum of 32°. Leaves of corn and sorghum were frosted somewhat. The total precipitation has been only 0.09 inch.

Field plots of corn have been harvested and sorghum varieties will be cut in a few days. The seed of all small grains has been threshed and most of it is cleaned and stored for the winter.

Field plots of winter wheat varieties were seeded today. The soil is too dry to permit germination until it rains. The winter nursery seeded early in August, when moisture conditions were excellent, is in good shape but should have rain soon for best results.

CORRECTION

On page 122 of the Cereal Courier of September 10, 1939, the 11th item in the table showing yields of spring oat varieties should read Markton x Rainbow, C.I. No. 3351.



CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
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October 10, 1939

No. 16

Personnel (Sept. 26 - Oct. 10) and Field Station (Sept. 16 - 30)

PERSONNEL ITEMS

Mr. A. C. Dillman left Washington October 9 for Minneapolis, Minn., where he will attend the meetings of the Flax Institute of the United States. At the close of the meetings he will go to St. Paul, Minn., and Fargo, N. Dak., to confer with Department and State officials regarding cooperative flax research. Mr. Dillman will be away about two weeks.

Mr. L. W. Kephart spent October 9 and 10 inspecting weed control experiments in New Jersey and Pennsylvania in company with extension agronomists of the State agricultural experiment stations.

Dr. M. A. McCall left Washington October 6 to visit southern and western States for the purpose of inspecting the field work of the Division and consulting officials at cooperating State agricultural experiment stations regarding the plan and conduct of investigational work. He will make stops in Illinois, Iowa, Nebraska, Kansas, Missouri, Oklahoma, Texas, Mississippi, Louisiana, and Arkansas.

Dr. V. H. Morris came to Washington the week of October 2 to discuss with members of the Division staff plans and methods for wheat quality research at the Federal Soft Wheat Laboratory at Wooster, Ohio, and to complete reports on the data obtained on the 1937 and 1938 crop samples.

RECENT PUBLICATIONS

J. F. Brandon, J. J. Curtis, and D. W. Robertson. Sorghums in Colorado. Colo. Agr. Expt. Sta. Bul. 449, 46 pp., and Appendix, tables 1-10, incl. November 1938. (Cooperation between the Colorado Agricultural Experiment Station and the Division of Dry Land Agriculture, and the Division of Cereal Crops and Diseases.)

George M. Burkert and Allan D. Dickson. A Comparison of Methods for the Determination of Diastatic Power of Malts. Cereal Chem. 16(5): 657-660. September 1939. (Cooperative investigations between the Division of Cereal Crops and Diseases and the University of Wisconsin.)

Louis R. Maxwell and J. H. Kempton. Delayed Killing of Maize Seed X-Rayed at Liquid-Air Temperature. Wash. Acad. Sci. Jour. 29(9): 368-374, figs. 1-2. September 15, 1939. (Cooperative investigations of the Bureau of Agricultural Chemistry and Engineering and the Bureau of Plant Industry.)

Max E. McCluggage, J. E. Anderson, and R. K. Larnour. Comparison of the Allis-Chalmers and the Buhler Automatic Experimental Mills. Cereal Chem. 16(5): 610-619, figs. 1-2. September 1939. (Contribution No. 60 of the Department of Milling Industry, Kansas Agricultural Experiment Station, in cooperation with the Division of Cereal Crops and Diseases, and the State agricultural experiment stations of the hard winter wheat region.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins)
(Oct. 1)

Only a trace of precipitation fell in September, which is the lowest September rainfall on record. Following the abnormally low rainfall of July and August, this lack of rainfall is becoming serious from the standpoint of crops and preparation of seedbeds for fall seeding. Temperatures in September also were very abnormal. The mean temperature was 84.1°, which is a new high record for September and 6.4° above normal. Daily temperatures ranged from a minimum of 47° to a maximum of 111°, which again is a new all-time record. The mean humidity and evaporation for the month also set new records for September. The mean humidity was 46.5 percent or 20.7 percent below normal, while the total evaporation was 8.159 inches.

No small grains have been sown because of dry weather. A few farmers have dusted in grains for pasture but most seedbeds are too rough for sowing. Seed for the experimental nurseries has been prepared and will be sown as soon as conditions permit.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Oct. 2)

The weather in September continued dry and was disastrous to any hopes for recovery of sorghum crops. The last effective rain was on July 22, and the long period of drought during the heat of summer effectively dried up sorghums and broomcorn.

Harvesting of the dried sorghums and collecting of seed heads has been under way for the last two weeks. Yields and quality of seed will be poor.

The maximum temperature for September was 103° on the 1st and 3d; for the last half of September the maximum was 94° on the 24th. The minimum temperature for the month was 36° on the 30th. There was only a trace of precipitation in September.

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Oct. 2)

The abnormally dry weather continues. Fields are so dry that September 15 seedings on clean fallow land have not emerged. Nursery seeding will be delayed until at least late in October to avoid, if possible, seeding in dust.

Many farmers in this area are "dusting" their seed in, and on heavy land that may be advisable though drilling sandy land in its present desiccated condition is inviting the soil to blow. Though we have had several windy days little dust has been in the air. This afternoon, however, visibility varies from 1/2 mile to a mile.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Oct. 3)

Very dry and cool weather prevailed during the last half of September. The total precipitation during this period was only 0.02 inch. Moderate winds prevailed so that in spite of the drought there has been almost no soil blowing. The average wind velocity for September was only 4.1 miles per hour which is the second lowest September wind velocity on record at this Station. The only lower average September wind velocity was 3.8 miles per hour in 1938.

The first killing frost this fall occurred September 24, when a temperature of 24° was recorded. The maximum temperature was 93° on the 18th and the minimum 24° on the 24th.

Cleaning of wheat and flax seed is completed. Seed from the oat and barley plots has not yet been cleaned. Some late flax still remains to be harvested and the safflower plots have not yet been threshed.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Sept. 30)

The month of September has been warm and dry except for a few cool days during the past week. The maximum temperature was 90° or more on 8 days, the highest being 95° recorded on the 12th. The first frost was a light one with a minimum of 32° on the 10th. Severe frosts did not occur until the past week, the coldest temperature being 23° on the 29th and 30th.

The precipitation for September was only 0.11 inch, which was not sufficient to germinate fall-sown field plots of winter wheat and rye. The winter nursery, which germinated in moist soil early in August, is still green but needs rain rather badly.

Field work in cereal plots is completed with the exception of husking varietal shocks of corn and weighing and threshing varietal shocks of forage and grain sorghums.

UTAH

AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (Oct. 3)

Conditions in September were favorable for harvesting and for the seeding of winter wheat. Heavy rains during the first half of the month insured germination of fall-sown wheat. Since then additional rains have thoroughly saturated the soil to a fairly good depth. Approximately 2 inches fell during September, and over 1/2 inch during the first two days of October. Much of the fall-sown wheat is now up to beautiful stands. In some cases the growth is three to five inches in height. These early fall rains are extremely valuable to the beet farmer as well as beneficial to the range.

All harvesting and threshing was completed during the month, including corn grown for silage. Yields of corn at the Central Experiment Farm were much lower than in 1938, while good yields were obtained in both Salt Lake and Iron Counties.

Yields of grain silage in Salt Lake County range up to 32 tons per acre, while wheat yielded up to 48 bushels, and barley as high as 113 bushels per acre on the same experimental area. Hybrid corn offers promise as a feed crop in this State.

There has been no freezing of tender crops up to this time, despite a temperature of 31° following this storm. Snow-capped mountains have been visible after each storm.

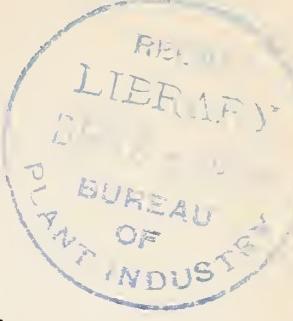
The mean temperature for September was 57.8° as compared to 60.7° for a 10-year average, and 62.2° for September 1938. The precipitation for the first nine months of this year totaled 11.62 inches, as compared to 11.88 inches for a 20-year average.

ARIZONA

AGRICULTURAL EXPERIMENT STATION, TUCSON (Cereal Agronomy, A. T. Bartel)
(Oct. 4)

During September the mean maximum temperature was 93.2° and the mean minimum temperature 65.7°, which were about normal. The total precipitation was 1.53 inches, which is slightly above the normal of 1.09 inches.

The sorghum nursery both here and at Mesa has more growth and is more uniform than at any since the writer has been stationed here. At Tucson, some selections from Prof. W. E. Bryan's (Head of Dept. of Plant Breeding, University of Arizona) Ajax x Kalo look especially promising. Considerable difficulty has been encountered in obtaining any appreciable quantity of seed when Antherless or male sterile were crossed with important local varieties, or even when back-crossed. A few of the earliest rows are nearly mature.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 31

October 25, 1939

No. 17

Personnel (Oct. 11 - 25) and Field Station (Oct. 1 - 15)

PERSONNEL ITEMS

T. R. STANTON and W. J. SANDO returned on September 9 from a two-months trip to Continental Europe and the British Isles, including attendance at the Seventh International Congress of Genetics, held at Edinburgh, Scotland. They sailed from Amsterdam, The Netherlands, on August 30, on a Dutch ship, the Johan van Oldenbarneveldt.

Messrs. Stanton and Sando visited points of interest in Denmark, Sweden, Germany, Switzerland, The Netherlands, France, England, and Scotland. They report that in Denmark, wheat, oats, and barley were widely grown and beginning to ripen at the time of their visit. The farmsteads and fields were uniformly neat and trim, and the crops in excellent condition.

The agriculture of Sweden was similar to that in Denmark, consisting mainly of the production of wheat, oats, barley, rye, sugar beets, alfalfa, timothy, and red clover. At the Swedish Plant Breeding Institute at Svalöf, they were informed regarding the interesting experiments with small grains and many courtesies were shown by Director Åkerblad and his staff. In Stockholm, in company with a party of economists, several cooperative enterprises, including a flour mill, rye crisp factory, macaroni factory, and housing projects, were inspected. At Upsala they visited the home, laboratory, and garden of Linnaeus (the father of modern systematic botany), in addition to the botanical gardens and the University of Upsala. In Sweden, as well as in Denmark, many excellent herds of dairy cattle were seen, the most popular breeds apparently being the Holstein-Friesian and Ayrshire.

In Germany between Sassnitz and Berlin, many rather large fields of wheat, oats, and rye were being harvested with binders and threshed with modern grain separators. There also were a number of large herds of Holstein-Friesian cattle. The route from Berlin to Nürnberg was through a region where peasants work numerous small tracts of land. Wheat, oats, barley, rye, sugar beets, potatoes, and hay were grown. Much of the grain was being harvested with sickles, small cradles, short scythes, and an occasional self-rake reaper. Binders were rare. The grain was hauled into the barns on wagons and carts drawn by cows and oxen. Nearly all the work was being done by old men, women, and children, many of them barefooted. Because of heavy fertilization the grain yields were estimated at more than double those usually obtained in the United States. Several well-kept young forests were seen along this route. In the upper Rhine Valley the crops were chiefly small grains and forage plants, but below the entrance of the Rhine Valley proper nearly all the land was devoted to grapes largely for wine. Many of the innumerable small vineyards were located on very steep slopes and exceedingly stony soil. Some of the slopes were so steep that steps had been built to the vineyards.

Switzerland is primarily a grass country, although there are many small fields of grain. Numerous small herds of dairy cattle, many goats, and a few beef cattle were seen. While in Zurich, the exhibits pertaining to agriculture on display at the Swiss National Industrial Exhibition, were inspected. In The Netherlands the fields are small and much of the grain was being harvested by hand. The Netherlands also has many large pasture areas in which large herds of Holstein-Friesian cows graze.

At Wageningen, The Netherlands, the chief agricultural research center of that country, some very interesting experiments with the small grains were seen at the plant-breeding institute.

On entering Belgium and passing on into northern France excellent agriculture was evident. The grain was being harvested with binders, and the yields apparently were very high.

The climate of northern Continental Europe, although exceedingly favorable for the culture of the small grains, is too cool for the production of corn. A few fields of corn for fodder were seen in Germany. In most countries extensive plantings of potatoes, one of the principal food staples, were seen. Most of the potatoes served in hotels and cafés were small and of poor quality. Canada thistles were seen in the fields of the small grains throughout Continental Europe. Some fields were badly infested. Owing to the moist, cloudy weather much damage to grain occurs during ripening and after harvesting.

In northern France much of the so-called wild land resulting from World War No. 1 had been reclaimed.

Nearly all the oats, where an opportunity was afforded to inspect them carefully, seemed to be the Victory variety, especially in Denmark, Sweden, Holland, and France. The comparative absence of cereal diseases in Europe was impressive. Some stripe rust of wheat was seen in Denmark and Sweden, as well as in England. In many sections both stem and crown rust of oats seemed to be virtually unknown, probably because of the cool climate. Very little smut was seen, and cereal breeders stated that smut was controlled primarily by seed treatment, and that there was no marked interest in breeding for smut resistance. In general, the improvement of the small grains in Europe is primarily for yield and quality, combined with ability to withstand the damp, cloudy weather frequently prevailing at harvest time.

On entering England the travelers were impressed by the prevalence of grassland and the vast area of land lost to agriculture because of hedge row fences. They were informed, however, that the hedges were maintained as a shelter for game. A visit was made to the Rothamstead Experiment Station at Harpenden, where the results from the classical experiments, as well as those referred to as modern, were explained. It appears that in England with heavy applications of artificial fertilizers and with a system of fallowing the land every fourth year, soil fertility may be maintained and excellent yields, particularly of the small grains, likewise maintained. A field of wheat that had been cropped to wheat continuously since 1843 was inspected. With the application of various combinations of artificial fertilizers and some attention to weed control, fair yields are still being obtained without deterioration of grain quality.

A visit also was made to the John Innes Horticultural Institution at Merton Park where extensive fundamental research in cytology was being conducted. Many different plant species, including numerous flowering plants, are being used as material for genetic and cytological research. Extensive and elaborate greenhouse and laboratory equipment is available. The grounds are wonderfully well kept and the laboratories were among the most modern observed anywhere in Europe. Sir Daniel Hall has retired as Director and is being succeeded by Dr. C. D. Darlington, the well-known cytologist.

From London a bus tour was made through rural England to Cambridge where sessions of the Seventh International Genetic Congress were held. As an introduction to the delegates a most interesting lecture was given by Dr. Herbert Hunter on small-grain improvement in England with special reference to the work at Cambridge. Some new small grain varieties were cited, including a new white winter oat and a new frit fly resistant oat. While at Cambridge visits were made to the potato disease and genetic laboratories where Dr. R. N. Salaman is developing disease-resistant potatoes. His large collection of wild and near relatives of the potato seemed to be very complete. From Cambridge they proceeded by motor bus to Edinburgh by way of Stratford-on-Avon, Liverpool, Chester, Windermere, and Warwick, England. The rural sections of England afford a picturesqueness and charm that was not observed in any other European country. While in Edinburgh in attendance at the Seventh International Genetic Congress a visit was made to the Scottish Society for Research in Plant Breeding at Corstorphine, where some excellent but very practical oat-breeding work is in progress.

The recall of delegates from the Continental European countries while the Congress was still in progress, because of the war scare, necessitated the cancellation of several tours and numerous papers.

The Congress closed early with only English and American geneticists present at the end. The general quality of the papers, exhibits, and demonstration papers was excellent. Much favorable comment was heard on the corn exhibits from the United States Department of Agriculture.

P.S. by Dr. J. H. Martin:

Mr. Stanton returned to Washington in prime condition, despite several sleepless nights on shipboard, occupied in peering through the portholes searching for submarine periscopes. He states that he did not miss a meal or even an important item on the menu during his transatlantic voyages.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Office of Chief of Bureau
B. P. I. Memo. 1070.

October 18, 1939.

MEMORANDUM FOR HEADS OF DIVISIONS.

Gentlemen:

The American Association for the Advancement of Science will hold its meetings in Columbus, Ohio, December 27, 1939, to January 2, 1940. Members of your staff who are to submit abstracts of papers to be presented at the meetings should be requested to submit these abstracts in the near future, as in many cases they must be in the hands of the secretaries of the various organizations the latter part of October or early November. It is desirable that they be forwarded to this office for approval promptly in order that they may reach the secretaries on the dates required.

It is suggested that you also bring to the attention of the members of your staff the importance of submitting the complete papers as soon as possible. If practicable, they should be sent to this office for approval not later than December 10. In exceptional cases, papers submitted after December 20 will be given approval.

Recommendations for attendance by members of your staff at Government expense should be submitted not later than November 15. Careful consideration should be given these recommendations, as it is not certain that attendance of anyone at Government expense will be allowed. Full information regarding the purpose of attendance and the objectives to be accomplished should be included for each individual whose attendance is desired.

Kindly submit, also, not later than December 10, your recommendations for attendance of employees of your Division who desire to attend at their own expense other than salary, if such authority is granted.

Sincerely yours,

E. C. Auchter
Chief of Bureau.

RECENT PUBLICATIONS

Wayne M. Bever. Reinoculation of Resistant Varieties of Wheat with Purified Physiologic Races of Tilletia tritici and T. levis. Phytopathology 29(10): 863-871. October 1939. (Cooperative investigation of the Division of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

R. W. Leukel and O. A. Nelson. Chlorine Gas As a Seed Disinfectant. (Phytopath. Note) Phytopathology 29(10): 913-914. October 1939. (Joint investigation of the Bureau of Plant Industry and the Bureau of Entomology and Plant Quarantine.)

Max Phillips, M. J. Goss, B. L. Davis, and H. Stevens. Composition of the Various Parts of the Oat Plant at Successive Stages of Growth, with Special Reference to the Formation of Lignin. *Jour. Agr. Res.* 59(5): 319-366, figs. 1-9. September 1, 1939. (E-79) (Investigation of the Industrial Farm Products Research Division, Bureau of Chemistry and Soils, and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, and the Idaho Agricultural Experiment Station.)

D. W. Robertson, C. C. Fifield, and Lawrence Zeleny. Milling, Baking, and Chemical Properties of Colorado-Grown Marquis and Kanred Wheat Stored 9 to 17 Years. *Amer. Soc. Agron. Jour.* 31(10): 851-856, figs. 1-2. October 1939. (Cooperation between the Colorado Agricultural Experiment Station and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, and the Grain Division, Bureau of Agricultural Economics.)

Roderick Sprague. Foot Rots and Root Rots of Small Grains in Oregon. *Oreg. Agr. Expt. Sta. Circ. of Inform.* No. 207, 3 pp. September 1939. [Mimeographed.] [Supersedes *Circ. of Inform.* No. 99.] (Investigations conducted cooperatively by the Division of Cereal Crops and Diseases and the Department of Botany, Oregon Agricultural Experiment Station.)

Roderick Sprague. Leaf Reddening in Oats in Oregon. *Oreg. Agr. Expt. Sta. Circ. of Inform.* No. 208, 3 pp. October 1939. [Mimeographed.] (Cooperative investigations by the Division of Cereal Crops and Diseases and the Department of Botany, Oregon Agricultural Experiment Station.)

A. F. Swanson. Long-Time Storage of Winter Wheat. (Note) *Amer. Soc. Agron. Jour.* 31(10): 896-897. October 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Arnold J. Ullstrup. Preliminary Observations on a Kernel Discoloration in Inbred and Hybrid Lines of Dent Corn. (Phytopath. Note) *Phytopathology* 29(10): 905-907, fig. 1. October 1939. (Cooperative investigations of the Purdue University Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

MISSOURI

AGRICULTURAL EXPERIMENT STATION, COLUMBIA (Rice Agronomy, B. M. King)
(Oct. 23)

The following yields were obtained from 4 series of drill width plots in cooperative experiments at the Missouri Agricultural Experiment Station in 1939.

Variety	C. I. No.	Yield (Bu. per acre)
Fulton	3327	70.0
Columbia	2820	62.4
Victoria x Richland	3502	62.1
Boone	3305	58.1
Victoria x Richland selection 35-413	----	56.7
Winnipeg	2500	53.7

With the exception of Columbia, these varieties were developed in cooperative experiments of the Division of Cereal Crops and Diseases and State agricultural experiment stations.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Oct. 17)

The first half of October continued dry but cooler. Some wheat is being "dusted in", but the soil is too dry for germination; no wheat has emerged in this vicinity.

Sorghum seed heads are being selected and harvested earlier than usual this year because almost all the plants have "dried ripe". The seed averages small and chaffy.

Dr. O. S. Aamodt and Dr. M. A. McCall were Station visitors last week.

The maximum temperature for the first half of October was 97° on the 6th and the minimum for the same period was 34° on the 14th. The precipitation was 0.09 inch.

NEBRASKA

AGRICULTURAL EXPERIMENT STATION, LINCOLN (Wheat Improvement, K. S. Quisenberry) (Oct. 20)

Winter wheat seeding at Lincoln has been completed under conditions none too favorable. The nursery seeding was started on September 27 and most tests were in by September 30. Although fallowed land was used it was difficult to get the seed down to moisture, and very ragged stands were obtained at first. Fortunately nearly an inch of rain evened up the stands. This moisture, which came in three rains, was the first of any consequence received at Lincoln since early in August.

The varietal plots were not seeded until the rain because cropped land was to be used. The seeding was done on October 9 and 10 and the plants are just now emerging. The soil is moist for only about 6 inches down, so a bumper crop is hardly in sight at present.

Seedings at Alliance were made early in September in dry soil and no emergence was reported until recently. At North Platte, a rain last week brought up the wheat but more moisture will be needed to put the plants in good condition for winter.

The fall has been characterized by warm weather, for the most part with much wind movement. Some frosts have occurred, but on October 18 Lincoln had a maximum temperature of 83°, accompanied by a strong south wind. Wheat fields in the vicinity of Lincoln are anything but encouraging. Plants are small, if up at all, the surface soil is drying out, and in some cases soil drifting has started. Unless moisture is received before winter sets in severe dust storms may be expected because the ground will be so poorly covered.

Dr. M. A. McCall and Dr. O. S. Aamodt were in Lincoln on October 8. Dr. Charles F. Sarle was a visitor on September 30.

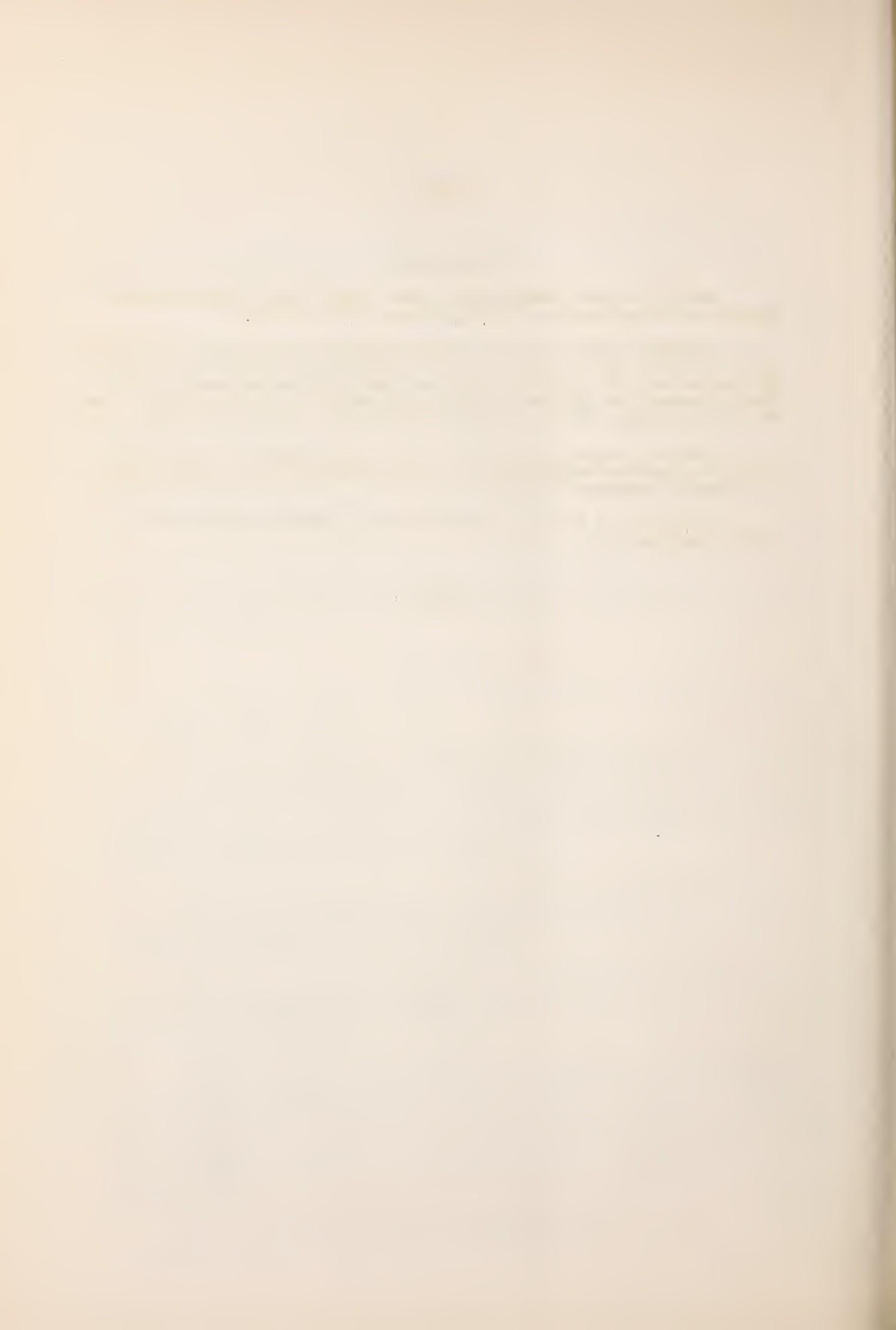
NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Oct. 16)

Moisture conditions were somewhat improved by 0.52 inch of rainfall during the first half of October, most of which was recorded on the 4th. The surface soil is again very dry, but there has been no damaging soil blowing because the wind velocity has continued to be very low. The maximum temperature was 77° on the 1st and the minimum 16° on the 15th.

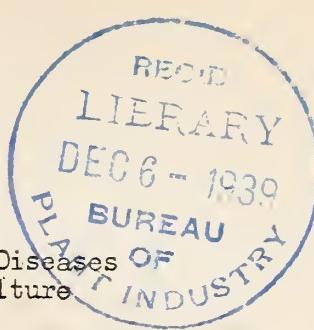
Rust has continued to spread on flax still standing so that very good notes have been obtained. Bison has consistently shown practically 100 percent prevalence of rust.

Harvesting of the flax probably will be completed this week if weather permits.



C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

November 10, 1939

No. 18

Personnel (Oct. 26 - Nov. 10) and Field Station (Oct. 16 - 31)

PERSONNEL ITEMS

Dr. A. G. Johnson and Mr. E. P. Carter were in Richmond, Va., November 8 and 9, investigating the possible use of high frequency electric current for disinfecting seed grain. The investigation was conducted in cooperation with the Thermo Research Corporation of Richmond.

Dr. A. G. Johnson and Mr. R. W. Leukel recently made a brief survey of the wheat nematode situation in several counties in part of that section of Virginia most severely affected by the wheat nematode disease in 1918 to 1921. Wheat and wheat screenings were examined at mills in nine counties - Warren, Augusta, Rockbridge, Roanoke, Pulaski, Wythe, Montgomery, Rockingham, and Shenandoah. In every case nematode galls were found in the screenings from wheat locally grown. The worst infestation occurs in Pulaski County. Here, at one mill, were found several bags of screenings that consisted of 95 percent nematode galls. A sack of these galls was obtained for experimental work.

From the observations made on this trip and from the reports received from millers and farmers throughout the area covered, it seems that the nematode disease of wheat is more generally prevalent and more severe in the Shenandoah Valley and adjacent areas than it has been at any time since the eradication campaign of 1919-1920.

Dr. Johnson and Mr. Leukel were gone four days, from October 23 to 26, inclusive.

NOTES ON CEREAL CULTURE AND IMPROVEMENT IN SWEDEN

By T. R. Stanton

OAT PRODUCTION AND BREEDING

Oats constitute the most important cereal crop of Sweden. The crop is grown in all agricultural regions on many different soil types. The annual harvest is about 70,000,000 bushels and, in addition, approximately 34,000,000 bushels are harvested in mixture with barley.

The wide variation in soil and climate found within the borders of Sweden necessitates many different varieties of oats. In southern and western Sweden, where the climate is comparatively moist with an annual rainfall of 25 to 35 inches, varieties of the Probsteier type having white or yellow kernels predominate. The best known of the old Swedish varieties are Victory (Seger) and Golden Rain (Guldregn), both of which are well known in the United States. In the eastern provinces of southern and central Sweden the predominating varieties of oats, Bell II (Klock II), Bell III, Engelbrekt, and Great Mogul (Stor-mogul) have black glumes. It is claimed that they produce more tillers per plant than the Probsteier type. They develop rather slowly in early summer, are fairly resistant to drought, and are adapted to the comparatively dry early summer climate of eastern Sweden.

In northern Sweden, where the growing period is short, only varieties with a very rapid development can be grown satisfactorily. Improved, high-yielding varieties such as Orion and Odal, developed at Svalöf, predominate there. The acreage of the new varieties, Eagle and Star, is increasing rapidly. Formerly, old mixed varieties and President (Black Mesdag) oats, introduced from The Netherlands, were grown in northern Sweden. Dr. Åke Åkerman, Director of the Plant Breeding Institute at Svalöf, claims that Eagle and Star have a stiffer straw and are of better quality than Victory. He told the writer that Prof. L. H. Newman, Dominion Cerealist, had reported that they were of promise in Canada. Two new hybrid oats at Svalöf have been named "Sun" and "Primus."

The breeding of small grains at Svalöf has shifted almost entirely from selection to crossing. So far, not more than 1 or 2 percent increase in yield has been obtained by crossing different pure-line and similar varieties from the old Probsteier oat. However, the cross between Victory and the comparatively unrelated variety, von Lochow Gelbhafer from Germany, has shown remarkable transgressions in yield. Eagle was cited as a product of this cross, which, at Svalöf, surpasses Victory 7 to 10 percent in grain yield. Director Åkerman believes that parents should not be too closely related for progress in breeding better varieties of oats by hybridization.

Improved varieties of black oats, such as Bell Extra and Sirius, and the variety Argus, bred at the Weibullsholm Plant Breeding Institute, have been derived from crosses of some of the older black varieties.

The Odal and Vit Odal (white Odal) are other improved varieties for northern Sweden derived from the cross Golden Rain x Dala (a line of the old northern white oats). Vit Odal is considerably earlier than Golden Rain in northern Sweden, yet yields nearly as much as that variety. Weibull's Bambu also is a white oat adapted to northern Sweden.

In Director Åkerman's large oat-breeding laboratory apparently all hybrid plants are examined very carefully, especially for grain characters, before further testing. Probably the outstanding oat improvements in Sweden have been due to this intensive study.

WHEAT IMPROVEMENT

The culture of wheat in Sweden is confined to the south, and the annual production is about 25,000,000 bushels. Until modern breeding work began in Sweden all the wheat produced was of old mixed varieties that had been grown for hundreds of years. The introduction of English Squarehead varieties into the Province of Skåne was a decided advance, as under favorable conditions these varieties produce much higher yields than the old Swedish sorts. The Squarehead type also has stiffer straw and greater resistance to stripe rust, but the quality is poorer. The principal contributions to wheat breeding have been the development of the Steel and Svea II varieties. The present program now includes the crossing of Svea II and older varieties with hard winter wheats from Hungary, Soviet Russia, and the United States. From these crosses new strains are being obtained with higher milling and baking quality. A well-equipped milling and baking laboratory has been developed at Svalöf.

In addition to yield and quality the characters of winter hardiness, strength of straw, and resistance to stripe rust are receiving much attention.

The growing of spring wheat has increased in Sweden during the last two decades as a result of the development of early varieties that mature in short, cold summers. Some of the better varieties are Kolben, Extra Kolben II, Diamond, and Fylgia. These produce flour of good baking quality.

BARLEY VARIETIES IN SWEDEN

The leading varieties of malting barley in Sweden are Guld (Gold), Opal, Kenia, and Maja. Guld is the result of a pure-line selection from an old mixed variety introduced from Gothland. It is earlier and has a better straw than the Chevalier variety. Opal, Kenia, and Maja were bred from the cross Gold x Binder (a pure line of Hanna).

In southern Sweden the same varieties are grown for feeding or malting. Seger, developed from a cross between Gold and Hannchen, is one of the promising new varieties at Svalöf.

On peat soils varieties of erectum barley are grown to some extent, as are also Svanhals, Primus, and Primus II.

In northern Sweden the new barleys, Vega, Dore, and Stella, developed as pure lines from old mixed stocks from the Silurian soils of Jämtland Province, are the important varieties. Winter barley is not grown in Sweden. Improved German varieties with high resistance to cold are now being introduced and tested for winter hardiness.

RYE IMPROVEMENT

The better improved varieties of rye in Sweden are Steel and King, selected from Star, and placed on the market in 1921 and 1933, respectively. The two most recent productions are High Bred Vasa and High Bred Vasa II, which were selected from an old Finnish rye.

EXPERIMENTAL METHODS AT SVALÖF¹¹

Director Åkerman stated that the improvement of small grains by crossing widely divergent types, that is, different species or widely differing varieties within a species, is being explored at Svalöf. This work was started in 1931 and includes determinations of the number and behavior of the chromosomes. Other methods include:

1. Searching for fertile plants with an unusual chromosome number in species hybrid progenies of low fertility.

2. Doubling of the chromosome number with heat, cold, X-ray, ultraviolet, radium, colchicine, etc.

3. Searching for twin seedlings from single seeds. Such twins sometimes differ in chromosome number, one of the pair usually having more than the characteristic number of chromosomes. Laboratory workers at seed-testing stations in Sweden constantly look for these twin seedlings and already have found them in wheat, rye, oats, timothy, and perennial rye grass.

Director Åkerman and his coworkers at Svalöf are expending much effort and time in elaborate testing of their varieties for yield and quality. Since 1936 the block method with random distribution of the varieties within the blocks has been largely followed. The advantages of the blocks are that less space is required and they can be fitted to various shapes of fields.

Formerly, selection was begun in the F₂ or F₃ generations, but now selection usually is postponed until later generations, F₆ to F₁₀. Frequently the better F₂ plants are bulked and then grown en masse for several generations before reselection and testing.

Dr. G. A. Wiebe attended the annual meeting of the United States Maltsters Association held at Madison, Wis., October 31 in cooperation with the Regional Malting Laboratory. At this meeting work in progress at the Laboratory was discussed.

FISCAL NOTICE

Reimbursement vouchers (Form 1012) are being signed erroneously. The payee should sign only once, and that signature should be on the line following the word "Payee". Sign full first name.

H. S. Smith
Junior Administrative Assistant.

UNITED STATES DEPARTMENT OF AGRICULTURE
Office of the Secretary
Washington

November 7, 1939.

MEMORANDUM TO CHIEFS OF BUREAUS AND OFFICES

The President, by Proclamation dated October 31, 1939, having designated Thursday, November 23, 1939, as a day of general Thanksgiving, the Department of Agriculture, both Washington and field service, will be closed on that day.

In States where Thanksgiving Day will be observed on November 30, employees may be excused from duty on that day, without charging their absence to annual leave, where Federal work may not be properly performed.

(Signed) H. A. Wallace,
Secretary.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

ARKANSAS

RICE BRANCH STATION, STUTTGART (Rice and Oat Production and Improvement, C. R. Adair) (Nov. 6)

Weather conditions were almost ideal during the rice harvesting season this year. All rice on commercial fields, as well as on the station, has been threshed. The rainfall during the harvest season was as follows: September 29, 0.85 inch; September 30, 2.29 inches; October 10, 0.55 inch; October 28, 0.84 inch. The first killing frost occurred October 31, with a minimum temperature of 30°. The 10-year average date of the first killing frost in the fall is October 30.

The yields of rice on commercial fields were probably below normal this year, especially the Blue Rose variety. For the most part, yields of Blue Rose were very low, although some growers obtained good yields. Yields on commercial fields ranged from 18 to 80 bushels per acre.

An unusual price situation has prevailed this fall. Nearly all of the Early Prolific produced this year sold for 85 cents a bushel; a good deal sold for 90 to 94 cents. The price dropped before Blue Rose and Nira were available so that the price offered for these varieties at threshing ranged around 80 cents a bushel, and a few sales as low as 60 cents were reported. Most farmers are holding the late varieties. The price of Early Prolific is usually 10 to 15 cents a bushel less than Blue Rose and Nira.

The yields for 16 rice varieties grown in 1939 in replicated field plots, approximately 1/40-acre in size, are shown in the following table:

Variety	C. I. No.	Grain type	Yield (Bu. per acre)
Acadia	1988	Short	54.9
Caloro	1561-1	do	49.4
Zenith	7787	Medium	44.5
Nira	2702	Long	44.0
Shoemed	3625	Medium	43.8
Arkansas Fortuna	----	Long	42.3
Asahi	----	Short	41.7
Colusa	1600	do	38.8
Early Prolific selection (Ark. 155)	----	Medium	38.1
Edith	2127	Long	36.8
Kumeji x Blue Rose selection	----	Medium	36.6
Old Style Blue Rose	----	do	36.5
Supreme Blue Rose	5793	do	36.1
Lady Wright	5451	Long	35.6
Early Prolific	5883	Medium	35.1
Delitus	1206	Long	30.4

Oats on the experiment station were sown during the period October 5 to 14. They are up to a good stand and have made a good fall growth. About the usual oat acreage was sown in this territory this fall. A few oats were seeded in the dust in September, but most of the acreage was seeded after the rains on September 29 and 30.

ARKANSAS FORTUNA

In 1931, a number of panicle selections from Fortuna (C.I. 1344) rice were grown in individual rows. There was a good deal of variation in the time of maturity among these selections. Several were saved for further testing. One of these, number 13-6, was an early line that appeared to be rather vigorous. After testing the selections for several years in nursery rows all of the lines were discarded except number 13-6, which is now called Arkansas Fortuna. It appears to be identical with Fortuna in all respects except that it is about 10 days earlier. In one experiment when the average date of seeding was May 12, the average date of maturity for Arkansas Fortuna was September 29 and for regular Fortuna October 9.

In 1933, a small increase plot of Arkansas Fortuna was grown. From 1934 to date, this selection has been grown in replicated field plots. In 1938, an increase plot of Arkansas Fortuna, 1.1 acres in size, yielded 90 bushels of seed. In 1939, 4.4 acres were grown on the experiment station and 45 acres on nine farm fields. The total production was about 2,800 bushels. All the farmers that grew Arkansas Fortuna this year liked it very much. From present indications this variety probably will be grown on over 1,000 acres in Arkansas in 1940.

Arkansas Fortuna matures earlier and yields slightly higher than Nira; however, Nira has a little better quality.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (Oct. 31)

The severe drought continues in this section. Precipitation of only 0.67 inch in four showers was received during October. This is 2.53 inches below normal and brings the accumulated departure since January 1 to 5.45 inches below normal. Rainfall for the months of July, August, September, and October amounted to only 3.68 inches or 6.76 inches below normal. During the drought of 1938 only 3.06 inches of precipitation was received during this same period. Following a record high temperature, high evaporation, and low humidity set in September, the October record is almost as outstanding. Mean temperature for the month was 70.9° or 4.1° above normal compared with the 6.4° above normal mean temperature of September. The mean humidity for the month was 53.9 percent, or 13.7 percent below normal, which has been exceeded only twice. Evaporation for the month was 5.374 inches, which is 0.909 inch above normal.

The showers of October 8 and 9 were sufficient to aid in working down seedbeds to some extent. Following this, fall seeding of experimental grain was started. Conditions were very unfavorable, the ground being very cloddy. All experimental seedings with the exception of the wheat bunt nursery were made from October 16 to 28 but, of course, no germination will occur until additional moisture is received.

In some parts of this county (Denton) sufficient precipitation was received to germinate grain but since no further moisture has been received, some of this is dying. Good rains were received in some adjoining counties.

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy,
V. C. Hubbard) (Nov. 1)

Fall seedings of wheat, barley, and oats in plots and in nursery rows were completed on November 1. Very little of the seed is expected to germinate until we receive rain. September 15 seedings of wheat sown deep on fallow show only a scattering of emerged plants at this date. The surface six inches of soil is powdery dry even though ample subsoil moisture to a depth of 5 to 7 feet is present on fallow land and on land cropped to spring oats.

Woodward, Ellis, Harper, and Beaver counties in northwestern Oklahoma are about the driest areas in Oklahoma this fall. Only 19 to 22 percent of the winter wheat acreage has been seeded in those counties and that was "dusted in." Rains fell 30 to 60 miles east and southeast of Woodward and wheat is visible in approximately half of the fields. Growth is not so abundant, however, as in many years and pasturage probably will be scant except in local areas.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Oct. 26)

Most of Kansas is now experiencing the fourth period of severe drought since early spring. In the Manhattan area drought during April and May damaged the 1939 wheat crop. This was followed by a wet period in June that interfered with harvesting and caused further deterioration of the wheat crop, especially in grain quality. Severe and prolonged drought and high temperatures during July destroyed much of the corn crop and damaged a large portion of that which survived. This, in turn, was followed by a wet period during the first half of August, resulting in a lush growth of sorghums, soybeans, alfalfa, and native grasses. A third period of drought ensued during the last half of August and all of September. Rains during the first few days of October brought some relief and enabled some of the winter wheat that had been sown in dry seedbeds to emerge. During the past two weeks there has been no rain and it is again extremely dry.

Each of the four drought periods has been accompanied by very high temperatures. Although it is now far past the time of the first killing frost in this locality, there has been no general killing frost as yet and the temperature continues to rise into the 80's each day. Trees now are shedding their leaves partly from light frost and partly from drought, but many still are in full leaf.

The 1940 rust nursery was sown during the first two weeks of October. The seedbed was in good condition and excellent stands were obtained. The nursery contains 3,154 short rows, about 2,300 of which are hybrid lines in various generations. Volunteer oats are numerous in the nursery and may have to be destroyed to conserve moisture unless hard freezes come soon.

Greenhouse plantings are nearly completed and cultures of both leaf and stem rust of wheat have been established. Studies on physiologic races of leaf rust and on the reaction of varieties and hybrid lines are already under way. High temperatures in the greenhouse are proving to be unfavorable, however.

FORT HAYS EXPERIMENT STATION, HAYS (Cereal Agronomy, A. F. Swanson)
(Nov. 1)

The rainfall for October amounted to 0.18 inch. The season is among one of the driest on record. As a consequence the germination of sown wheat has been very poor and spotted and the prospects for a crop in this region are most discouraging. Only partial stands have been secured on fallowed land because of dry surface soil. The moisture in fallowed land has penetrated to a depth of from 18 to 24 inches with the top 5 to 6 inches of soil dry. There is very little moisture in cropped-land soil.

The experimental sorghums have been harvested and threshed. The grain is now being cleaned and weighed. Sorghums planted on cropped land failed to make grain. Most of the nursery plantings were on fallowed land and yields from 10 to 20 bushels were obtained from the early maturing varieties. Corn was a complete failure.

It is believed that there is sufficient roughage in the territory to meet the feed requirements for livestock. On the other hand, the number of cattle in the region is lower than in former years.

Visitors at the Hays station during the month were: Dr. M. A. McCall and Dr. O. S. Aamodt of the Bureau of Plant Industry; and Director L. E. Call of the Kansas Agricultural Experiment Station.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Nov. 2)

The weather during the last half of October was generally cool and cloudy with moderate winds. Some precipitation, chiefly snow, occurred every day from October 22 to 27, inclusive, but only 0.02 inch was recorded on the 26th and only traces on the other days. Freezing temperatures were recorded on 11 of the 16 days. The maximum temperature was 74° and the minimum 6° .

The flax harvest is completed but some threshing still remains to be done.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith)
(Nov. 7)

Comparatively warm and dry weather has continued up to this date, with a total of 0.47 inch of moisture in October. Temperatures ranged from 75° to 7° during the month. Only a few light snow flurries have occurred, totaling 1.5 inches of snow in October.

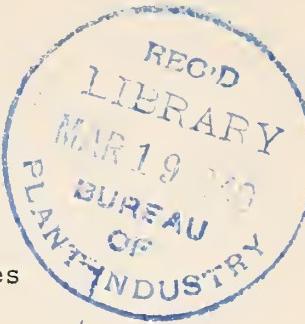
The soil moisture is still insufficient to cause germination of field plots of winter wheat seeded in September. The nursery, seeded in August, is still green but badly in need of moisture.

Samples of the various corn varieties that have been drying out in the shed since husking time have now been shelled, preparatory to computing the yields of shelled corn.

The ground is still unfrozen most of the time, after being frozen for a few days following a minimum temperature of 2° during the first days of November.

C E R E A L C O U R I E R

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 31

November 25, 1939

No. 19

Personnel (Nov. 11 - 25) and Field Station (Nov. 1 - 15)

PERSONNEL ITEMS

The following named members of the staff of the Division of Cereal Crops and Diseases were among those in attendance at the meetings of the American Society of Agronomy held at New Orleans, La., from November 22 to 24, 1939:

I. M: Atkins	J. W: Jones
H: M: Beachell	C: H: Kyle
R: C: Eckhardt	L. S: Mayer
L. S: Evans	E. S: McFadden
E. G: Heyne	K. S: Quisenberry
V. C: Hubbard	S. C: Salmon
M. T: Jenkins	Hugo Stoneberg
N. E: Jodon	G. H: Stringfield
E. C. Tullis	

The following papers were presented:

Effect of Short-Day Length on Rice Varieties Grown under Field Conditions, by H. M. Beachell.

The Effect of the Method of Combining the Four Inbred Lines of a Double Cross upon the Yield and Variability of the Resulting Hybrid, by R. C. Eckhardt.

Genetic Studies of Heat and Drought Tolerance in Maize, by Elmer G. Heyne.

The Segregation of Genes Affecting Yield of Grain in Maize, by Merle T. Jenkins.

Inheritance and Linkage Relationships of a Chlorophyll Mutation in Rice, by N. E. Jodon.

The Use of Modern Statistical Methods in Field Experiments, by S. C. Salmon.

Relative Field Performance of Corn Inbred Lines and ~~their~~ F_1 and F_2 Progenies, by G. H. Stringfield.

Diseases of Rice and Methods of Determining Disease Reaction in the Southern United States, by E. C. Tullis, C. Roy Adair, and E. M. Cralley.

After the meetings at New Orleans, Dr. M. T. Jenkins went to Columbia, Mo., to confer with Department and State officials in regard to cooperative corn research, and Mr. Jenkin W. Jones proceeded to Crowley, La., and Beaumont, Texas, to confer with officials of the State agricultural experiment stations regarding cooperative rice experiments and to study material collected in connection with genetic studies with rice. Dr. Jenkins will be back in Washington on November 30 and Mr. Jones will return about December 6.

RECENT PUBLICATIONS

A. T. Bartel and D. C. Acpli. Arivat, Possible New Barley for Southern Arizona, Beats Vaughn at Mesa and Tucson. Ariz. Farmer-Producer 18(18): 18. November 11, 1939. (Cooperative investigation of the Division of Cereal Crops and Diseases and the Arizona Agricultural Experiment Station, at Mesa, Ariz.)

B. A. Burkhardt. The Electrometric Determination of Diastatic Power of Malts. Cereal Chem. 16(5): 652-657. September 1939. (Cooperative investigations of the Division of Cereal Crops and Diseases, the Wisconsin Agricultural Experiment Station, and the United States Maltsters Association.)

L. F. Martin, A. K. Balls, and H. H. McKinney. Protein Changes in Mosaic-Diseased Tobacco. Jour. Biol. Chem. 130(2): 687-701, figs. 1-4. October 1939. (These studies were conducted under Bankhead-Jones Project Special Research Fund 2-17, United States Department of Agriculture, Bureaus of Plant Industry and Agricultural Chemistry and Engineering cooperating.)

L. E. Melchers and C. O. Johnston. The Wheat Stem and Leaf Rust Epidemics of 1938 in Kansas. U. S. Dept. Agr., Bur. Plant Indus. Plant Dis. Rptr. Sup. 116: [51]-68, figs. 1-5. October 15, 1939. [Mimeo-graphed.] (Contribution No. 394 from the Department of Botany, Kansas Agricultural Experiment Station, in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.)

Merritt N. Pope. Viability of Pollen and Ovules of Barley after Cold Storage. Jour. Agr. Res. 59(6): 453-463, figs. 1-3. September 15, 1939.

GERMINATION OF AGED FLAXSEED

A. C. Dillman

The germination of 13 samples of flaxseed grown at Mandan, N. Dak., from 1918 to 1929 is shown in the table below. The last germination test was made in November 1939. The seed samples, now from 10 to 21 years old, have been stored at Mandan. A previous report by Dillman and Toole was published in the Journal of the American Society of Agronomy 29(1): 23-29, fig. 1. January, 1937.

The germination of flaxseed grown at Mandan, N. Dak., 1918-1929

Sample No. ¹	Year grown	Germination February 1934		Germination June 1936		Germination November 1939	
		Age (Years)	Percent	Age (Years)	Percent	Age (Years)	Percent
1	1929	4	96	7	99	10	95
2	1928	5	98	8	98	11	96
3	1927	6	98	9	99	12	97
4	1926	7	94	10	92	13	90
5	1925	8	94	11	91	14	83
6	1924	9	90	12	89	15	67
7	1923	10	95	13	96	16	93
8	1922	11	94	14	94	17	72
9	1921	12	58	15	56	18	37
10	1920	13	89	16	89	19	48
11	1919	14	55	17	50	20	7
12	1919	14	75	17	69	20	11
13	1918	15	66	18	58	21	5

¹/ Samples 1 to 11 were North Dakota Resistant No. 114; samples 12 and 13 were Newland, both varieties of the linseed type.

NOTES ON CEREAL CULTURE AND IMPROVEMENT IN THE NETHERLANDS, ENGLAND, AND SCOTLAND

By T. R. Stanton

THE NETHERLANDS

Oat Varieties

Only limited breeding work with oats is in progress at the Plant Breeding Institute at Wageningen, which the writer was fortunate enough to visit. Oat breeding investigations in The Netherlands are mostly conducted at Westpolder, Groningen, under the direction of the well-known Dutch plant breeder, Dr. R. J. Mansholt. Dr. H. de Haan, Assistant Director at Wageningen, stated that the two most popular varieties grown in The Netherlands are Adelaar (Star) and Victory, improved varieties from Sweden. Adelaar is considered superior to Victory. Binder and Mansholt III, developed at Westpolder, also are of considerable importance. Binder was selected from Carsten III and Mansholt III was originated from a cross between Mansholt II and Victory.

Golden Rain II, introduced from Sweden; is the leading variety of yellow oats. Flamingsgold, likewise a yellow variety recently introduced from Germany, appears to be of some promise. Black President (Black Mesdag) and Orion II, varieties of black oats, are grown to a limited extent in The Netherlands. The explanation given for the growing of black oats was that farmers in certain sections prefer them, and that they also were better adapted to certain soil types than yellow or white oats.

Wheat Varieties

The Plant Breeding Institute at Wageningen does some wheat breeding, although its major function, according to Dr. de Haan, is fundamental research in plant genetics, cytology, and physiology.

Among the standard improved varieties of winter wheat for The Netherlands, which the writer saw growing in plots at the Plant Breeding Institute, were Juliana, Wilhelmina, and Imperial IIa. The more important varieties of spring wheat grown in The Netherlands are Blanka, Mansholt White, and Van Hoek.

During recent years many new crosses between the best standard varieties of wheat of western Europe and varieties introduced from central Asia, Italy, Soviet Russia, and Poland have been made. No new strains of particular promise have yet been obtained from these crosses. A more extensive collection of exotic varieties is being assembled for further cross-breeding experiments.

Barley Varieties

Vindicat, Fletumer, and Mansholt III, in the order named, are the leading varieties of winter barley now grown in The Netherlands. They originated as selections from the Groninger native or land variety. Vindicat was selected at the Plant Breeding Institute, Wageningen, and has been the leading winter barley for five years. Dr. de Haan was enthusiastic regarding it. Mansholt II and Fletumer were selected by Drs. J. H. and R. J. Mansholt, respectively, at Westpolder.

Gold, Kenia, and Mansholt Tweerijige, in the order named, are the leading varieties of spring barley. Gold, a stock of the old Swedish native variety, was introduced from Svalöf, Sweden, many years ago. Kenia was developed from a cross between Binder and Gold at the Plant Breeding Station at Abed Laaland, Denmark. As the name implies, Mansholt Tweerijige was bred by Dr. R. J. Mansholt at Westpolder.

Dr. Lammers, in charge of malting barley investigations, informed the writer that Kenia was now the most important variety of brewing barley grown in The Netherlands, and that Saxonia, a new spring variety, was of some promise. About 25 percent of the barley crop of The Netherlands is used for malting.

Dr. Lammers is active in encouraging farmers to grow high grade brewing barley of the best available varieties. Samples of Vindicat and Kenia barleys were secured.

Rye Variety

Petkus winter rye, the well-known Germany variety, is grown almost exclusively in The Netherlands.

ENGLAND

Cambridge

Oats

In a lecture on small grain improvement in England to delegates to the Seventh International Genetic Congress, Dr. Herbert Hunter, of the Plant Breeding Institute, stated that frit-fly injury was the principal limiting factor in the production of spring oats in England. Winter oats is not damaged by the frit fly but is handicapped by lack of cold resistance. The frit fly eats out the growing point of the young oat plant. Cunliff, a newly-developed variety resistant to the frit fly, is being increased for distribution. Dr. Hunter emphasized the fact that breeding for greater hardiness in winter oats is limited by not having sufficient hardiness in the few varieties now available. Other objectives in oat breeding include stiff straw, better quality, and resistance to stripe rust.

The new white winter oat, Resistance, developed from a cross between Winter Turf and Argentine at Cambridge, is not sufficiently winter hardy.

Wheat

The wheat-breeding program at Cambridge includes the development of high-yielding and high-quality wheats for bread and biscuit making. Breeding for stiffer straw and high resistance to stripe rust also is in progress. Among the varieties of wheat mentioned by Dr. Hunter that were being grown commercially were Yeoman, Squarehead, Squareheads Master, Heldfast, Little Joss, Rivet, etc. Wilhelmina, a white winter wheat and a popular variety in The Netherlands, also is grown in England. Rampton Rivet is a selection of Rivet which was placed on the market for the first time in the fall of 1939. According to Dr. Hunter, this new wheat has yielded an average of 10 percent more than commercial Rivet and also has a better straw.

Barley Varieties

Dr. Hunter stated that 60 percent of the English barley crop was used by the malting and brewing industries and that 90 percent of the barley grown was the Spratt Archer variety. The old Chevalier barley has been used as foundation stock for nearly all the breeding work in progress at Cambridge. The excellent straw and high quality of the Archer barleys account for their popularity. Improved varieties introduced from Denmark also have been quite satisfactory in England.

SCOTLAND

Oat Production and Improvement

Oats rank first among all crops of Scotland. The Scotch people eat rolled oats, or porridge, as they call them, for breakfast the year round. Oats constitute the principal grain concentrate used in feeds for sheep, horses, dairy cows, and poultry.

The cool, moist, yet not exceedingly wet climate is very favorable for oat culture and an excellent quality of grain is produced, which, in good seasons, tests as much as 48 pounds to the bushel.

The Scottish Society for Research in Plant Breeding has in progress some very constructive oat improvement work at Corstorphine, near Edinburgh, under the direction of Prof. William Robb. Among the newer and more promising varieties developed and introduced are Elder, Bell, and Early Miller, all midseason, high-yielding, plump-kernelled white oats. Abundance, Marvelous, Record, etc., varieties developed by Gartons Ltd., Warrington, England, also are grown to some extent in Scotland. Director Robb stated that the improved varieties from Sweden such as Victory, Star, and Eagle, are well adapted to Scotland, and that Victory is probably the leading variety grown in Scotland, as well as in the British Isles as a whole.

Among the special lines of oat investigations under way at Corstorphine are (1) crossing on the Trelle Dwarf from Canada for the development of stiffer-strawed oats, (2) crossing on the common wild oat (Avena fatua) to introduce the property of delayed germination into the best cultivated types, and (3) crossing to determine if marked improvement in oats can be obtained from transgressive segregation.

According to Professor Robb many lines with short, very stiff straw and desirable panicle and grain characters had been selected from an F_3 population of a cross between Early Miller and Trelle Dwarf grown in 1939.

A large F_4 population of selected plants from an Elder x Avena fatua cross was being grown. A germination test of a portion of seed from each selected plant was made and all those showing delayed germination were sown in the spring of 1939. The workers at Corstorphine believe that the character of delayed germination has been transferred successfully to the Elder and Early Miller types. A variety of this kind should prove valuable in Scotland where wet, cloudy weather frequently causes severe sprouting in the shock.

A most interesting group of very tall plants that appeared in a cross of Record x Avena fatua is being studied. The occurrence of these unusually tall plants is explained as due to transgressive segregation. They are 2 to 3 feet taller than the Elder and Victory varieties. Professor Robb reported that they tiller well and may be of value for forage. He is planning to determine if similar tall plants can be developed by crossing certain other varieties or Avena fatua. However, it is doubted whether such marked transgressions in height of plant could be expected from all such crosses. These unexpected results indicate possibilities for improvement in other characters such as thinness of hull and cold resistance by taking advantage of transgressive segregation. The oat improvement work at Corstorphine was exceedingly interesting to those who are engaged in the breeding of oats.

Wheat Improvement

Attempts are being made to develop better varieties of spring wheat for Scotland at Corstorphine. Japhet is still the most popular variety although it is susceptible to loose smut, and stocks have become badly mixed. The breeding of early varieties with resistance to lodging and loose smut is the chief objective. Varieties with some resistance to loose smut are being collected from various foreign sources and crossed on the cultivated varieties of Scotland. So far no polyploid reproductive tissue has been obtained at Corstorphine by the use of colchicine on wheat.

Barley Improvement

Some barley improvement is under way in the attempt to develop earlier varieties with shorter and stronger necks and better grain quality by crosses involving Spratt Archer, Kenia, and Plumage Archer. An effort also is being made to improve the quality of Scotch common barley which is grown in North Scotland. Various selections from these old varieties crossed on Plumage Archer have given rise to promising new lines. The possibilities of breeding a naked malting barley also are being explored.

[This is the last of 3 articles by Mr. T. R. Stanton reporting his observations on agriculture while traveling in Europe in the summer of 1939. The first two articles appear in the Cereal Courier of Oct. 25 and Nov. 10, 1939.]

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

OKLAHOMA

SOUTHERN GREAT PLAINS FIELD STATION, WOODWARD (Cereal Agronomy, V. C. Hubbard) (Nov. 17)

Much of the wheat acreage in northwestern Oklahoma still has not been seeded though many farmers are drilling at present. A light local rain totaling 0.34 inch on November 9 was sufficient to sprout wheat on the Station. Cool weather has delayed its development, however, and very little has emerged. On the Station and on well-prepared farm fields the moisture penetrated deep enough to contact subsoil moisture so that sprouted grain may continue growth. Wheat on poorly prepared land, however, is apt to die if more rain is not received soon. Emerged wheat, even 100 miles east of Woodward, has made very little growth and is furnishing little or no pasture except in very local areas.

With no wheat pasture and little hay many farmers are being forced to sell part of their livestock.

OREGON

PENDLETON FIELD STATION, PENDLETON (Cereal Agronomy, J. F. Martin)
[Nov. 21]

Yield and other data of flax varieties grown in 3-row plots in triplicate at Pendleton, Oreg., in 1939 1/.

C.I. No.	Variety	Height (In.)	Test weight (Lbs.per bu.)	Seed size 2/ 3/	Straw (Lbs.per acre)3/	Yield (Bu.per acre)
320	Redwing	25	51.2	4.5	2,220	18.0
188	Newland	25	50.8	4.3	2,340	16.8
839	C.I. 188 x (19x112)	26	51.0	4.8	1,980	16.4
644	Bolley Golden	19	51.0	6.1	1,850	16.2
389	Bison	25	50.6	5.6	1,500	15.9
737	Buda selection	27	51.4	4.3	2,170	15.6
244	Linota	26	51.2	3.5	2,140	14.9

1/ Sown March 24; all varieties ripe July 20.

2/ The seed size is the weight of 1,000 seeds in grams.

3/ Total air-dry weight less seed weight.

UTAH

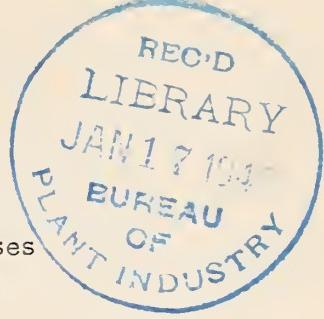
AGRICULTURAL EXPERIMENT STATION, LOGAN (Cereal Agronomy, R. W. Woodward) (Nov. 15)

The autumn thus far has been unusually clear and warm. There has been almost no precipitation since the first week in October, yet the winter wheat generally appears to be in excellent condition. In the winter wheat nursery at Clarkston, stands are almost perfect and the grain has made considerable growth. The soil has not been frozen up to this date, allowing continuous growth for the fall-sown wheat.

Dry weight yields have been calculated on the corn silage nursery at Logan and Salt Lake; the yields range from 4.89 tons to 9.34 tons an acre. Dry weight yields for the nursery at Logan and Salt Lake are shown:

<u>Logan</u>	<u>Salt Lake</u>
Iowa Hybrid 13	7.08
U. S. Hybrid 13	6.70
Funks G. 94	6.64
U. S. Hybrid 44	6.54
Pioneer Hybrid 322	6.45
U. S. Hybrid 52	6.43
Indiana Hybrid	6.31
Iowa Hybrid 939	6.02
Illinois 960	5.99
Isaac Parry	5.85
U. S. Hybrid 63	5.81
Funks G. 53	5.71
U. S. Hybrid 65	5.60
Ohio W. 17	5.43
Minnesota 13	5.20
Improved Leaming	4.89

Hybrid corn varieties adapted to this section have consistently outyielded any other standard corn variety.



C E R E A L C O U R I E R

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December 10, 1939

No. 20

Personnel (Nov. 26 - Dec. 10) and Field Station (Nov. 16 - 30)

PERSONNEL ITEMS

AMERICAN SOCIETY OF AGRONOMY

The annual meeting of the American Society of Agronomy was held in New Orleans, La., from November 22 to 24, 1939, in The Roosevelt Hotel.

The following officers were elected for 1940:

President: Dr. F. J. Alway, University of Minnesota, University Farm, St. Paul, Minn.

Vice-President: Dr. L. E. Kirk, University of Saskatchewan, Saskatoon, Sask.

Chairman, Crops Section: Dr. S. C. Salmon, Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture, Washington, D. C.

Chairman, Soils Section: Dr. W. H. Pierre, Department of Agronomy, Iowa State College, Ames, Iowa.

Secretary-Treasurer: Dr. G. G. Pohlman, University of West Virginia, Morgantown, West Va.

Editor: Mr. J. D. Luckett, New York Agricultural Experiment Station, Geneva, N. Y.

Fellows-elect were Dr. L. D. Bauer, Dr. M. T. Jenkins, and Dr. A. L. Patrick.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
WASHINGTON

Division of
Cereal Crops and Diseases

Nov. 27, 1939.

MEMORANDUM RE PROPERTY AND INVENTORIES

Within the past few years the regulations regarding property and inventory reports have become more rigorous since they must meet the scanning of the General Accounting Office and Department, as well as Bureau supervision.

In 1937 we requested that an actual and thorough physical check be made of all property so that we might know exactly what was on hand and clear our records as well as the combined Bureau report. This year we notice numerous changes from last year's record with no authority given for such changes. The following are examples. For years one of our stations has reported a drill and a planter. In last year's report these two implements were signed for as being on hand but now it develops that the drill and the planter are one and the same. To explain this fact to the satisfaction of the General Accounting Office will not be easy.

Another report records fewer pieces of sectional furniture this year than last with no indication of what became of the missing parts.

A third report records the loss of a Weight per Bushel Tester with the explanatory statement that this equipment disappeared from a locked room. No such explanation will be acceptable to the General Accounting Office.

It is appreciated that keeping track of property is a real difficulty, not to say a first-class nuisance, but the General Accounting Office does not consider either of these factors when it audits the inventories. We simply must conform to the rules laid down and be prepared at all times to account for every piece of property with which we are charged. Inability to do this may lead to serious consequences and we should appreciate the present opportunity to get our house in order.

In order that our report may pass our own Bureau as well as the Comptroller General's Office, all non-expendable equipment for which you signed in your last report, is now charged to you and you are definitely and unequivocally accountable for such property. When any property is to be dropped because of loss, wear, obsolescence, etc., it must be so reported in writing (on one of the many forms provided for such action) and something more than a perfunctory reason must be given for the action desired.

Summing up the responsibility attached to the inventory three things are to be remembered; a physical check is to be made when each inventory is rendered, you are held accountable for all property for which you sign exactly as though it were cash, and each non-expendable item to be dropped must be explained in a properly executed and approved manner.

Very truly yours,

M. A. McCall
Principal Agronomist in Charge,
and
Assistant Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Arlington, Va., are in cooperation with State agricultural experiment stations or other agencies.)

LOUISIANA

RICE EXPERIMENT STATION, CROWLEY (Rice Agronomy, J. Mitchell Jenkins) (Dec. 6)

The weather in November was mild and the precipitation below normal. The maximum temperature was 82°, with 80° or above on 1 day. The minimum temperature was 30°, with 32° or below on 3 days. The average mean temperature of 57° was 1° lower than for November 1938.

The total precipitation for November was 2.12 inches, which was recorded on 7 days. This was 2.37 inches less than for 1938 and 2.26 inches less than the 28-year average for November.

The total precipitation so far this year is only 40.03 inches. On the same date last year it was 46.08 inches. If the precipitation for December does not exceed the 28-year average for that month, the annual precipitation will be below that of last year, which was 6.35 inches below normal.

The excellent November weather permitted rice farmers to complete threshing operations without any damage to their crop. The weather also enabled many farmers to complete fall plowing before the end of the month.

Threshing operations on the Station were completed on November 28. Most of the plowing and much of the other field work has been accomplished.

MINNESOTA

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY FARM, ST. PAUL (Wheat Breeding, E. R. Ausemus) (Dec. 5)

Winter wheat is in good condition in Minnesota. There was sufficient moisture to germinate the seed and growth has been fair in most parts of the State.

November has been the driest on record with only 0.02 inch of rain throughout the entire month. The normal rainfall is 1.27 inches. Temperatures have been above normal during the latter half of the month. There has not been any snowfall in most parts of the State.

Corn production in Minnesota this year set an all time record both for total production and average yield per acre. Corn was too dry to use mechanical pickers in harvesting the crop in many sections of the State.

TEXAS

TEXAS SUBSTATION NO. 6, DENTON (Wheat Improvement, I. M. Atkins) (Dec. 1)

The record drought of this area has at last been broken to some extent. A shower of 0.63 inch on November 11 was followed by another shower of 0.24 inch on November 17, and this was followed by a slow rain amounting to 1.36 inches on November 29 and 30 to make a perfect Thanksgiving. Germination of small grain started after the first shower. On well-prepared seedbeds and certain types of soil, good stands emerged about

November 25. On cloddy, loose seedbeds, the germination was incomplete and only partial stands had emerged at the time of the last rain. With favorable weather, good stands should be well established by December 15. The rains were general in the central and midwestern sections of the State, and parts of the south Plains. From newspaper reports, it appears that the main wheat belt in the Panhandle did not receive material relief from the drought.

The first killing frost of the season was recorded on November 28 with a minimum of 26°. This is 15 days later than normal. The maximum temperature for the month was 85° and the mean temperature was 53.5°, about 1° above normal.

Dr. M. A. McCall and Dr. O. S. Aamodt were official visitors recently. The writer attended the meetings of the American Society of Agronomy in New Orleans, November 22-24.

KANSAS

AGRICULTURAL EXPERIMENT STATION, MANHATTAN (Wheat Leaf Rust, C. O. Johnston) (Dec. 8)

The fall of 1939 has been one of the warmest and driest in the records of the Weather Bureau in Kansas. No severely cold weather has occurred to date, the lowest temperature at Manhattan being 16° on November 27. There was no hard killing frost until October 28 and there have been few heavy frosts since that date. Volunteer oats, therefore, have flourished in nursery and field-plot sowings of winter wheat at Manhattan. Not only are volunteer oats using much needed moisture, but it is felt that they are consuming nitrates necessary to the wheat for the remainder of the winter and early next spring. The heavy infestation of volunteer oats resulted from the severe damage to oats by hail last June.

The fall drought at Manhattan finally was broken on November 10 by a rain of 1.4 inches. This rain was fairly general in central Kansas and was a great help to winter wheat that either had not germinated or had only partly emerged. Another rain of 0.42 inch on November 30 also has helped wheat considerably. However, rains have not been heavy enough, nor have they occurred over a wide enough area, to bring conditions up to anything like normal. The western half of the State remains extremely dry and there are vast areas of sown land on which wheat has not yet emerged or is so small and weak that it scarcely shows in the drill row. Crop conditions for the State as a whole are decidedly unfavorable and prospects for a good wheat crop in 1940 are anything but bright.

A little leaf rust of wheat and stem rust of oats was found on volunteer plants near Manhattan in early October. The stem rust has almost disappeared and leaf rust is now becoming scarce. No infection has been found on fall-sown wheat in field sowings, although a little has been observed on early-sown wheat in nursery sowings.

Greenhouse rust work is progressing satisfactorily. More than 60 collections of leaf rust already are in culture and are being analyzed for their physiologic race content. Promising hybrid lines of winter wheat are being tested for resistance to leaf rust. Several hundred plants of oats from compound hybrids are being tested for response to known races of both crown and stem rust. Crown-rust inoculations already have been completed and part of the readings have been made.

NORTH DAKOTA

UNITED STATES NORTHERN GREAT PLAINS FIELD STATION, MANDAN (Cereal Agronomy and Flax Breeding, J. C. Brinsmade, Jr.) (Dec. 1)

Extremely mild, dry weather prevailed throughout November. Only traces of precipitation were recorded during the month.

The maximum temperature was 69° on the 13th and 14th, and the minimum 8° on the ninth. The average daily mean temperature was 36°, which is 7° above normal.

The average daily wind velocity, 3.2 miles, is the lowest for any month on record at this Station during the past 26 years.

DICKINSON SUBSTATION, DICKINSON (Cereal Agronomy, R. W. Smith) (Dec. 2)

The month of November was extremely dry and much warmer than usual. Only a trace of precipitation was recorded. There was very little windy weather and hence no dust storms. The maximum temperature was 70° on the 13th. A minimum temperature of 2° was recorded on the 2d and 10th. The mean temperature for the month was 34.2° or 7.5° above normal, making this the warmest November at this station since 1923. There has been no snow this fall except about 1 1/2 inches late in October that melted in a short time.

Field plots of winter wheat and rye have not yet germinated. The winter wheat in the nursery, sown in August, evidently is weakened so much by lack of fall moisture that there is little likelihood of an effective stand in the spring.

MONTANA

AGRICULTURAL EXPERIMENT STATION, BOZEMAN (Wheat Improvement, R. H. Bamberg) (Dec. 7)

There has been little precipitation throughout the State during the last two months. At Bozeman there has been no effective precipitation since late September. In some areas, winter wheat that was seeded early in September made good growth but in most fields emergence was late and plants have only a few leaves each. Temperatures have been abnormally high and, in general, the ground is very dry. A maximum of 62° was recorded on December 4.

Yields in bushels per acre for the spring wheat varieties grown in the Uniform Regional Nursery at the three stations, Bozeman, Moccasin, and Havre, are given in the following table.

Yield of spring wheat varieties grown in the Uniform Regional Nursery at Bozeman, Moccasin, and Havre, Mont., 1939.

Variety	C. I. No.	Bozeman Yield (Bu. per acre)	Moccasin Yield (Bu. per acre)	Havre Yield (Bu. per acre)	Av.
C.-D.C. x C.-H.F. 1/	12005	76.7	9.4	18.3	34.8
Do	11941	71.7	9.9	18.5	33.4
Thatcher	10003	67.5	11.3	16.3	31.7
C.-D.C. x C.-H.F. 1/	12008	69.0	11.0	14.5	31.5
Do	12006	74.0	9.3	10.6	31.3
Comet x Pilot	11930	65.6	12.2	15.4	31.1
H-44 x Thatcher	11791	65.3	11.3	14.2	30.3
Do	11890	67.9	9.1	13.5	30.2
H-44 x Double Cross	11892	66.0	9.8	14.6	30.1
H-44 x Marquis	11781	55.4	9.9	12.7	29.3
H-44 x Ceres	11883	66.7	9.5	11.8	29.3
H-44 x Thatcher	11889	63.6	9.6	13.9	29.0
Marquis	3641	64.6	10.4	11.7	28.9
H-44 x Thatcher	11898	64.7	8.9	13.1	28.9
Comet-1110 x H-44-Ceres	11949	66.3	9.1	8.3	27.9
H-44 x Marquis	11887	63.9	8.1	10.7	27.6
Regent	11869	59.4	9.5	12.3	27.1
Pilot - 13	11945	57.9	8.3	14.7	27.0
H-44-Ceres x Marquis	11929	60.6	8.8	10.4	26.6
C.-D.C. x C.-H.F. 1/	12007	56.7	9.5	12.8	26.3
H-44 x Ceres	11882	57.5	8.7	11.5	25.9
Reliance x Hope-Reward	12009	56.2	7.9	11.4	25.3
Reliance x Hope	11934	57.6	8.0	7.3	24.3
1131 x Pilot	11948	58.4	7.5	8.5	23.8
Hope x Ceres	11897	49.6	8.8	13.0	23.8
Comet x N.N. 1110	11931	43.4	10.4	11.4	21.7

1/ Ceres-Double Cross x Ceres-Hope-Florence.

WYOMING

SHERIDAN FIELD STATION, SHERIDAN (Courtesy of Dry Land Agriculture, R. S. Towle) [Dec. 9]

Acre yield and test weight of flax varieties grown in triplicate close-drilled plots at Sheridan, Wyo., 1939.

[Sown May 15; all varieties ripe August 5]

Variety	C. I. No.	Test weight (lbs. per bu.)	Yield (Bu. per acre)
Bison	389	51	8.4
Linota	244	51	6.7
Redwing	320	52	5.2
Rio	280	48	3.8
Selection of C.I. 161	744	50	3.6

Weather conditions were favorable until late July, when high temperatures depleted soil moisture and caused the crop to ripen prematurely. The July mean maximum temperature was 90°. There were 16 days with temperatures of 90° or higher. The precipitation for the 4 months, April to July, was 11.37 inches.

OREGON

PENDLETON FIELD STATION, PENDLETON (Cereal Agronomy, J. F. Martin)
(Dec. 1)

Climatic conditions during the fall have been decidedly adverse for crop production. Most of the summer fallow was too dry for wheat to germinate until late in October, when showers totaling 0.44 inch fell. Seeding operations on the Station were completed November 3.

Grain has emerged in some farm fields and on the lower spots in experimental seedings, but in the majority of cases the soil dried out before the seed had much more than sprouted. Consequently, reseeding may be necessary in many instances. Only 0.03 inch of rain fell in November, whereas the average for the past 10 years was 1.51 inches. The precipitation for the period from January 1 to December 1 was 3.13 inches below normal. More important is a shortage of 1.92 inches for the period from September to November, inclusive. Temperatures have been moderate and favorable for plant development.

CALIFORNIA

BIGGS RICE FIELD STATION, BIGGS (Rice Agronomy, L. L. Davis)
(Dec. 1)

This fall has been very dry in California; in fact, it has been very dry all year. So far this year, there has been 6.37 inches of rainfall, whereas the 26-year average for the corresponding period is 15.80 inches.

Near normal rice yields were obtained this year. Harvesting was accomplished in a short period and with a minimum of expense owing to dry favorable conditions. The quality of the rice crop this year is probably the lowest in history. Many lots are milling as low as 20 percent head rice, and selling for about \$1.00 per cwt. on the present market. Rice of good quality, milling 50 percent head rice, is selling for about \$1.60 per cwt.

Yields on the Station this year were nearly normal. Ammonium sulphate continued to produce the highest increases in yield in the fertilizer experiment. Ammonium sulphate is extensively used in the commercial production of rice in California. Owing to the European war, ammonium sulphate appears to be difficult to obtain and the price is very high. This problem is causing considerable concern in the California rice area.

The following table gives the yields of rice varieties grown in field plots in 1939.

Mr. Eusebio Villaneva, who operates a rice and sugar-cane farm of about 4,000 acres in the Philippine Islands, was a Station visitor last week.

Average yield of 36 rice varieties grown in triplicate 1/66-acre plots at the Biggs Rice Field Station, Biggs, Calif., 1939.

Variety	C.I. No.	Grain type	Yield (Bu. per acre)
(1600 x Blue Rose) 2913A32-1-1-2-1	-----	Medium	111.7
(221A83-8 x Caloro) 2715A2-1-1-1-2-2-1-3	-----	Short	102.6
(Niro Vialone x Wataribune) 244A6-20	-----	do	101.2
Caloro Check (Average 12 plots)	1561-1	do	100.7
Calady selection 100	-----	Medium	100.5
(1600 x Blue Rose) 2913A26-1-2-1-1-1	-----	do	99.7
Early Wataribune	7789	Short	97.8
Haya Kitabu	6949	do	96.3
Tosa Bozu	5747	do	96.1
(Caloro x Lady Wright) 241B7-33-6	-----	do	93.9
(1600 x Caloro) Plant 14	-----	do	93.1
(1600 x Caloro) Plant 7-1	-----	do	92.9
(1600 x Blue Rose) 2913A61-1-1-1-1-2	-----	Medium	90.0
(Niro Vialone x Wataribune) 244A7-2	-----	Short	90.0
Selection No. 175	-----	do	89.5
(221A83-8 x Caloro)	-----	do	88.5
(Caloro x Lady Wright) 241B5-3-1-1-1-2-30	-----	do	88.5
(1600 x Lady Wright) 243A17-3-1-1-1-1	-----	do	88.2
Kinai No. 195	5684	do	88.0
(1600 x Lady Wright) 243A1-1-1	-----	do	87.8
(Caloro x Lady Wright) 241B7-3-1-1-1	-----	do	87.5
Early Prolific	5883	Medium	86.0
Zenith	7787	do	85.3
(Caloro x Lady Wright) 241B5-3-1-1-1-2	-----	Short	85.1
Shiro Beniya	5758	do	84.6
(1600 x Lady Wright) 243A6-50	-----	do	83.6
(Caloro x Blue Rose) 2914A46-1-1-1-1-1	-----	Medium	81.6
Gin Bozu	6873	Short	80.7
(Edith x Fortuna) 283A5-6-4-1-1-1	-----	Long	80.7
(Caloro x Lady Wright) 241B31-2-14	-----	Medium	78.7
Colusa	1600	Short	77.2
Lady Wright selection 31	-----	Long	76.5
Lady Wright	5451	do	76.5
Calady	7786	Medium	72.8
Onsen	-----	Short	72.8
(Edith x Fortuna) 283A2-1-1-1	-----	Long	62.1

ARIZONA

AGRICULTURAL EXPERIMENT STATION, TUCSON (Cereal Agronomy, A. T. Bartel) (Dec. 5)

The mean temperature for November was 62.2° compared with the normal of 57.8. So far this season there has been no killing frost; the lowest minimum temperature of 35° was recorded on November 30. Normally the first killing frost in the fall occurs on November 19. Up until the pre-last few days in November the lowest temperature was 44°. The total precipitation for the month was 0.54 inch.

The warm weather of November has helped the growth of the wheat hybrids at Mesa. On the other hand, some of the late sorghum hybrids here still have some immature seed, and for that reason none of them has as yet been harvested.

NOTICE

This issue of the Cereal Courier is the last for the calendar year 1939. The next issue will be dated January 10, 1940.
